#37
PACIFIC BIBLE COLLEGE EAST
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BOSTON, MA 02136

Louisiana Birds

Louisiana Birds

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Published for the
LOUISIANA WILD LIFE AND FISHERIES COMMISSION
By LOUISIANA STATE UNIVERSITY PRESS

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George H. Lowery, Jr.

Library of Congress Catalog Card Number 55-9351

First Edition

Printed in the United States of America

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will not wonder why

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Acknowledgments

THE WRITING OF this book has been a pleasant task. As I have reviewed the birds of Louisiana, one by one, I have relived many memorable experiences. These reach back over the years to a never-to-be-forgotten July day nearly twenty-seven years ago when Francis Marion Weston, the dean of Gulf Coast ornithologists, took the time to introduce a thirteen-year-old boy to the science of ornithology. I am sure that at least some of the field marks that I have employed for species in the following pages are the very ones Mr. Weston pointed out to me on my first field trip with him that day in 1927.

I have since been in the field with many of the leading ornithologists of the world, and from each I have learned something. Moreover, I have read scores upon scores of books about birds. How can one be sure which ideas are one's own instead of ideas gleaned from others? One thing is certain: no ornithologist can write on the identification of American birds without making use of information contained in Roger Tory Peterson's field guides to birds. Every serious student of birds now virtually memorizes these books as the first requisite to becoming proficient at species recognition. Peterson has attained such a high degree of perfection, both as an artist and as a field ornithologist, that it is doubtful if his books will ever be improved upon to any marked degree. I gratefully acknowledge the immense stimulation that his works and his personal communications have afforded me over the past twenty years.

Robert E. Tucker's copious illustrations for the book speak for themselves. But what the pictures do not tell is the boundless extent of Tucker's friendly co-operation and his painstaking efforts to satisfy my wishes. All this, coupled with the fact that he was once a student of mine and a companion on an expedition to southern Mexico, as well as on numerous field trips closer to home, has made our present joint undertaking a particularly pleasurable one to me. The numbered text figures, not initialed by Tucker, were done by Miss Joan Landry and myself, except where accredited to someone else.

The initial drawings for the book were instigated by Dr. Benjamin F. Mitchell and Mrs. May W. DeBlieux, of the Bureau of Educational Materials,

Statistics, and Research, of the Department of Education at Louisiana State University. The original plan was to issue a much shorter book in the publication series of that bureau. Such a book could have contained only black-and-white illustrations and the barest textual material. During the execution of the drawings, but before the text was prepared, the planned scope of the book was enlarged, and the Wild Life and Fisheries Commission assumed sponsorship of the revised project. I wish, however, to express my sincere appreciation to Dr. Mitchell and Mrs. DeBlieux for providing the impetus that initiated the work and for relinquishing the earlier drawings that Mr. Tucker made at their request.

It is impossible for me to express adequately my gratitude to Mr. L. D. Young, Jr., Director of the Wild Life and Fisheries Commission, to the members of the Wild Life and Fisheries Commission itself, and to Mr. Ted O'Neil, Chief of the Commission's Division of Fur and Refuges. To these gentlemen goes the credit for endorsing the plan of the book here consummated and arranging for its publication. Mr. O'Neil particularly has devoted himself assiduously to helping me in every way possible.

President Troy H. Middleton, Dean Cecil G. Taylor, and Dr. Oscar W. Rosewall have given more than their mere administrative approval to my devoting a part of my University time to the work that has gone into the project. Each has followed its development with a very friendly interest. Since, however, museum and teaching duties regularly occupy most of my time, the actual writing of the text and the preparation of certain text figures and graphs was necessarily done for the most part in evenings, on weekends, and in periods that were ostensibly vacations. My family, through all this, has been indulgent.

Burgess Publishing Company and my good friends Drs. O. S. Pettingill, Jr., and W. J. Breckenridge, have kindly granted permission to reproduce as Figure 13 portions of a chart that appeared in *A Laboratory and Field Manual of Ornithology*. Samuel A. Grimes, in addition to the personal attention that he has given to the engraving of the plates and other illustrations, has generously allowed the use of a number of his striking photographs, including the incomparable portrait of the dichromatic Screech Owls reproduced opposite page 58. Appreciation is also extended to Clair A. Brown, Allan D. Cruickshank, Claude H. Gresham, Jr., T. Kohara, Fred W. Lahrmann, James P. Morgan, Stephen M. Russell, Peter Scott, Fonville Winans, and Davis Aerial Photographic Service, National Audubon Society, Saskatchewan Museum of Natural History, and the Standard Oil Company (N.J.) for permission to reproduce their photographs.

Every resident ornithologist in the state, without exception, has made all his notes available to me in order that the information might be used in the preparation of this book. In mentioning only a few of these people I am sure to omit the names of some who have been immensely helpful, but I would be guilty of reprehensible ingratitude if I failed to single out Jas. Hy. Bruns, Thomas D. Burleigh, Fred J. Buchmann, H. B. Chase, Jr., P. A. Daigre, J. L. Dorn, Miss Rose Feingold, John Gee, Thomas R. Howell, Horace H. Jeter, Mr. and Mrs. Robert W. Krebs, Mr. and Mrs. R. B. Moore, Buford Myers, and Robert E. Tucker. But to say simply that my associate, Robert J. Newman, has been helpful would be a gross understatement. Not only has he offered many suggestions during the writing of the manuscript, applying his unexcelled abilities both as an ornithologist and as a scholar, but he has also been a daily source of assistance and intellectual stimulation.

Finally, it is more than proper that I express my appreciation to Mrs. Marguerite Ponder for her assistance and to Mrs. Lulu H. Patrick for her untiring labors in typing the manuscript and proofreading and for her many helpful suggestions.

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Preface

THIS IS NOT a state bird book in the traditional sense. Its one objective is to introduce the people of Louisiana to the absorbing subject of ornithology, mainly through the medium of that wealth of bird life which is their heritage. Conventional state bird books usually combine such an end with a second one—that of assembling for convenient scientific reference the specific records and factual data upon which their generalizations concerning the various species are based. Though I am thoroughly in accord with the latter objective, I believe that in the present instance it is better to divorce that objective from the first one. The audience for whom this "introduction" to Louisiana birds has been prepared is composed mainly of people who have a potential interest in birds and a desire, perhaps, to learn more about them but who have not as yet been carried by that desire to a scientific study of ornithology. This audience would not, in my opinion, be greatly served by the precise documentation of each statement that is made; and, at the same time, such details would almost certainly decrease the readability of the text and greatly increase its length. In due course the basic factual data concerning the birds of the state amassed since the excellent summation by Harry C. Oberholser in 1938 will be made the subject of a more technical publication than the present one is intended to be.

In following the policy of nontechnical presentation, I have here further departed from the plan of most state bird books by omitting all reference to subspecies, except for a brief discussion in one of the introductory chapters of the concept and some of its applications. Subspecies are the populations or combinations of populations within a species that differ sufficiently from one another to be distinguishable and hence are given a name. For various reasons, quite a number of species are represented by two or more such subspecies in collec-

tions of specimens assembled from a single state. Quite properly the names of these subspecies are included in the technical lists of the birds of that state. Although I am myself absorbed with the study of subspecific variation and recognize its very special importance to a better understanding of the problem of species formation and other biological phenomena, I am nevertheless of the opinion that a detailed catalogue of subspecies recorded from a state is of no practical concern to the vast majority of bird students. Only a few subspecies of birds in the whole of North America can be recognized in the field with absolute certainty. Generally speaking, only the museum worker, having access to comparative material in the form of study skins, is in a position to decide to which subspecies a given specimen belongs. For this reason I am opposed to overemphasizing subspecies in books intended for the general public by devoting two or more separate accounts to forms of the same species under distinct, named headings. Indeed, I am opposed to giving subspecies distinctive common names at all, even when such names incorporate the name of the species (such as Long-tailed Black-capped Chickadee, instead of Long-tailed Chickadee). The treatment of subspecies in technical ornithological publications serves, of course, a valid scientific purpose, but their inclusion in this book could only lead to confusion on the part of those for whom the work is intended.

The space saved in omitting a catalogue of detailed records and in not dealing with subspecies has enabled me to devote more attention to those aspects of ornithology that I believe pertinent to the interest of the nonspecialist. The first step in the study of any group of objects or things, whether they be minerals, plants, or animals, is to apply a correct name to each entity. So it is with the study of birds. Consequently, in the pages that follow, I have attempted to supply a means whereby the interested person can correctly identify the birds he sees. To achieve this end I have given concise diagnostic field characters of each species, that is, features that will serve directly or otherwise to distinguish every species of bird in the state from all other species that have been recorded within our borders. Obviously it is not necessary to tell how a Yellowthroat differs from a Brown Pelican. In the Yellowthroat's own family, on the other hand, there are many small yellowish birds that are somewhat similar; but the male Yellowthroat may be distinguished from all of them by the single fact that it wears a rectangular, solid black mask. The beginner needs further to be warned, however, that *rectangular, solid black mask* means exactly this—not the kind of disrupted black marking that partly surrounds the eye of the Kentucky Warbler.

No aid to identification is more effective than diagrams or paintings of birds grouped in such a way that similar species may be compared directly and their dissimilarities analyzed. In recognition of this fact, at least one illustration is included of each of the 377 species treated in the text. These bird portraits, which have been ably executed by Robert E. Tucker, are designed to facilitate species recognition and are not intended as mere decorations to the book. If Mr. Tucker's skill with pen and brush has produced pictures pleasing to the eye, that is so much the better.

In the species accounts I have given the status of each species with respect to its seasonal occurrence, employing standard ornithological terminology except with respect to the interpretation of the terms *casual* and *accidental.* Species that are represented regularly somewhere in the state in every month of the year are called *permanent residents.* Unless otherwise noted, this designation implies that the species in question breeds within our borders. The American Coot has often been recorded throughout the summer months, as well as at all other times of the year, but no nest, downy young, or other evidences of actual nesting have been found. Consequently, the species is classed as a permanent resident with attention being called to the hiatus in our knowledge concerning its breeding status. The term *summer resident* is employed for species that nest somewhere in the state but are not of regular annual occurrence here in winter. The term *summer visitor* is applied to species that ordinarily occur here only in summer but do not nest. An example is the Magnificent Frigatebird, which is seen in numbers along our coast in the warm months but does not breed anywhere in the United States. *Winter residents* are species that occur here in winter, usually arriving from more northern nesting grounds in late summer or in fall and remaining here until late winter or spring. Included in this category, for convenience, are a few birds that reach as far south as Louisiana only during periods of severe winter weather, drifting back northward as soon as conditions permit. *Casual visitors* are birds that wander to our state only at more or less infrequent intervals. Arbitrarily they may be defined as birds that have been recorded more than once but less than a dozen times all told. The term *accidental* applies to species for which there is but one record for the state. *Transients* are species whose regular occurrence in the state is limited to periods of migration, although an occasional individual may be seen at other seasons.

An attempt has been made to show major seasonal changes in the status of the various species where such changes occur. I have also tried to state in very

general terms the usual times of arrival and departure of migrants. In Table 3, near the end of the book, much of this information is shown graphically, and the earliest and latest dates of occurrence are supplied. These extreme dates take into account all available authentic records from the time of Audubon to October 1, 1954. The preface to this table discusses some of the difficulties associated with trying to indicate the relative abundance of various species in terms of their population density or of the frequency with which they are seen. While the table employs only four degrees of abundance (*common, uncommon, rare, and very rare* or *irregular*), other shades of abundance are frequently indicated in the text itself, where use has been made of a graded series of modifiers, ranging from *extremely* through *very* and *moderately* to *fairly*. The device *not uncommon* is occasionally used to indicate a degree of abundance between fairly common and uncommon.

In the introductory chapters I have discussed briefly a variety of subjects relating to certain aspects of local ornithology, as well as to ornithology in general. I have included, for example, a discussion of the sequence of molt in birds because a knowledge of this subject is important in learning to identify birds in all their variations of plumages including those associated with age, sex, and season. Similarly, I think an understanding of the structure of a feather and the modifications of the avian skeleton is of interest to the layman and serves to enhance his appreciation of birds as living organisms. But the selection of topics is by no means an indication of the scope of the whole field of ornithology.

Not counted among the 377 species of birds here considered to comprise the state list are three species included by Oberholser on the basis of evidence that I do not consider sufficient. Reference is made to these species in their proper sequence in the text, but the headings to the accounts are placed in brackets and the accounts themselves are set in a slightly different format. Accounts of four other species reported since the publication of Oberholser's book are handled in the same way because in each instance the evidence for the admission of the bird to the state list is again not wholly satisfactory. Three of these are pelagic species recorded only in our offshore waters (see discussion under the Audubon Shearwater).

The nomenclature, both scientific and vernacular, follows almost exactly the *American Ornithologists' Union Check-List of North American Birds* (4th ed., 1931, and its various supplements). Since a new edition of this highly important work is scheduled for early publication, I have tried to anticipate

some of the changes it will include in order that the bird names used in this book will conform as closely as possible. Because of the influence of our French-speaking citizens, many colorful colloquial names exist for Louisiana birds. I have made no concerted attempt to list all of these French names, but I have included the ones I have most often heard in my travels in southern Louisiana.

GEORGE H. LOWERY, JR.

Museum of Natural Science
Louisiana State University
Baton Rouge, Louisiana
24 October 1954

Louisiana Birds

Introduction

No aspect of natural history is more fascinating to a greater number of people than the study of birds. This fact is reflected in the large memberships in bird clubs and ornithological societies, by the capacity audiences at public showings of wildlife films, and by the record sales of books pertaining to birds. No less indicative of the appeal that birds hold for the average man is the fact that seldom does one encounter a person who is not eager to discuss them or to inquire about the proper identity of a bird he has seen. This interest manifests itself in a boy's elation when he finds his first Mockingbird nest. The sportsman, sitting in a duck blind on a cold winter morning, experiences a rare exhilaration when he beholds the beauty of a squadron of teal or a brace of pintails wheeling over the marsh in the morning mist. The farmer stops his tractor to watch a wedge of "honkers" pass over; the sailor follows the graceful forms of the gulls gliding over the wake of his ship; and the housewife puts crumbs on the ledge outside her kitchen window to attract the Cardinals, whose bright red attire she admires. In the ranks of ornithologists there have been great statesmen, such as Thomas Jefferson, who published a list of the birds of his beloved Virginia, as well as men in many other walks of life. Indeed, I have found that often the simplest man, such as a peon tilling his *milpas* in a clearing in the depths of a remote Yucatán jungle, watches the birds around him and has names for most of them, including some of the smallest.

In the United States the study of birds is rapidly becoming a national pastime, as it is already in England. The sale of over a quarter million copies of Roger T. Peterson's field guides to birds in the last two decades is in itself ample proof of the mounting interest on the part of the general public. An activity that takes men and women of all ages, singly and in groups, out of doors in all kinds of weather and over all sorts of terrain — through mosquito-filled marshes, tick-infested fields and thickets, and up boulder-strewn slopes of tall mountains—must indeed hold an appeal of magni-

tude, especially since these forays are repeated weekend after weekend with ever-mounting enthusiasm.

I think that everyone watches birds for much the same reason. As a hobby birds provide recreational opportunities unmatched by any other class of animals. As the highest of the vertebrates, next to mammals, they convey to us a feeling of kinship, based partly, perhaps, on the fact that they display personality, such as lower animals do not. And, unlike most of the mammals, which are difficult to observe in the wild, birds permit themselves to be seen and studied without exasperating effort. In doing so they provide a seasonally changing spectacle that is never quite the same for two months in a row, even from the vantage point of a single wood. Then, too, the great number of different kinds of birds and their color variations due to sex, age, and season provide an unending challenge to discovery and recognition, even under favorable conditions and with the aid of good binoculars. Birds are just elusive enough. They provide a quest, a lure, the end of which is attainable but never quite attained in any man's lifetime. If one should by chance find all of the birds that might conceivably visit one's garden, there remain others awaiting discovery in a nearby field or swamp, or still others in an adjacent state. Ultimately the quest for new birds may carry the real enthusiast to the Dry Tortugas, the Gaspé, or the Rockies, up the Alaskan or down the Pan-American Highway—all in the hope of seeing some bird he has not previously observed. This game of finding birds has an everlasting and enduring appeal, and it becomes more absorbing the deeper one delves into it.

But to many people the study of birds is more than a game or diversion. To the ornithologist it is the serious business of searching for new facts to fill the gaps in man's knowledge of the world of nature. The real student of birds is interested in a great deal more than adding new species to his list. He is absorbed with deciphering the intricacies of bird behavior or the perplexities of bird migration. He is interested in working out patterns of molt, the physiology of avian reproduction, the factors limiting avian distribution, or maybe the relationship of one group of birds to another on the basis of anatomy. He has participated in the banding of over six million birds in the United States and Canada, whereby much has been learned concerning the movements of birds and their longevity, as well as their social organization. He has led expeditions that have visited the remote corners of the world, and he has been responsible for amassing great collections of study skins in

our museums. In brief, the ornithologist in interested in one or more of scores of problems that are part of the biology of birds. Yet he is not necessarily an employee of a museum or a university laboratory. He is just as likely to be a lawyer or a chemist or a business executive who, by devoting his spare time to ornithological pursuits, is making contributions to science.

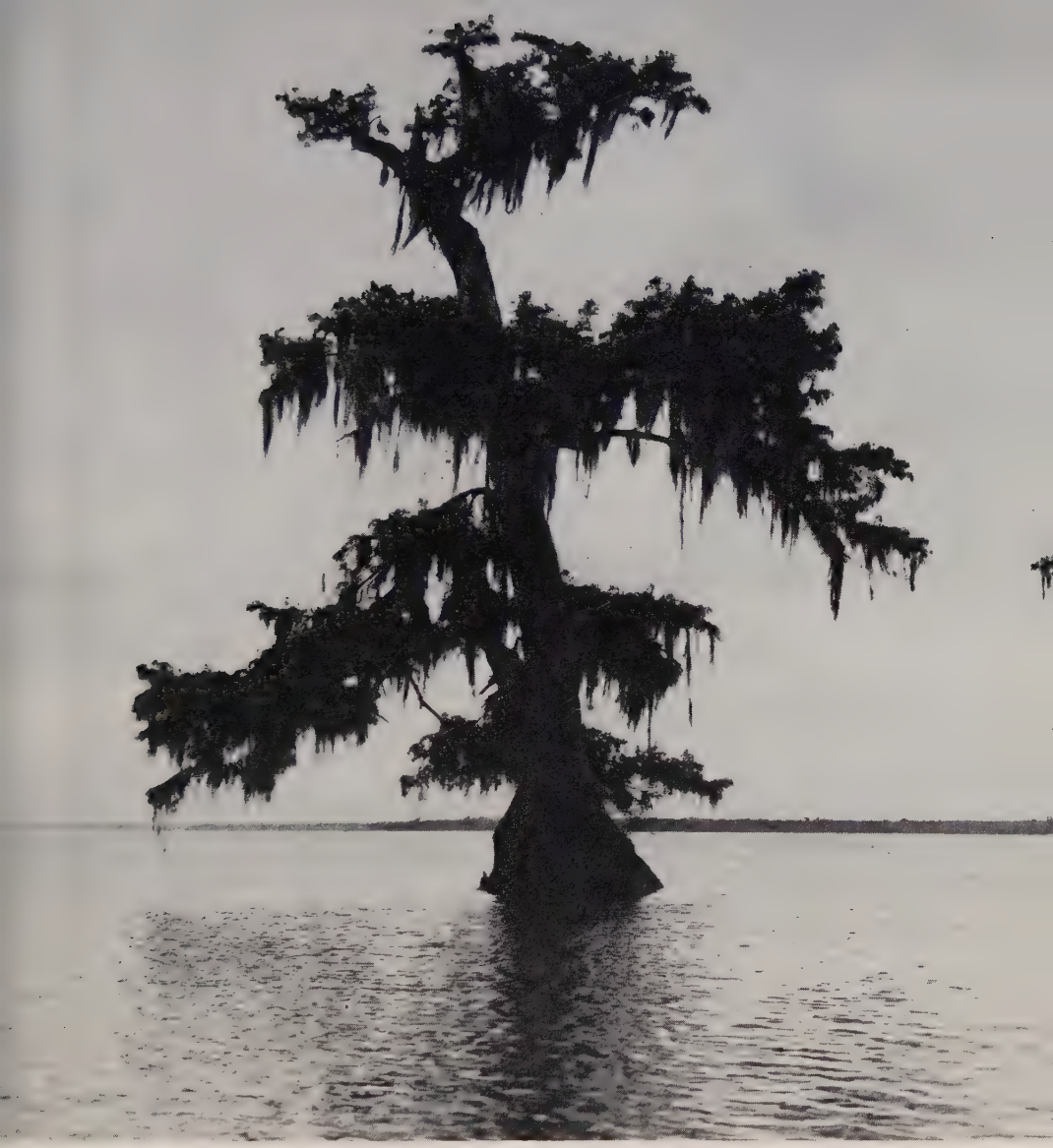
It is no wonder, with this legion of enthusiasts ferreting out new facts, that birds are now acknowledged by zoologists to be the most thoroughly worked and the best understood of all animal groups. This is not to suggest that our knowledge of birds is complete or even nearly so, for there are just as many unexplored horizons as ever. New discoveries merely open up new vistas; new facts suggest new avenues of inquiry. Some of the greatest gaps in our knowledge of birds are concerned with problems that the student can tackle in his own back yard. Indeed, the life history of no bird, even the commonest, is so well known as to preclude further careful study. All the beginner needs is a foundation knowledge, and when this is gained, he soon begins to see for himself numerous problems that excite his curiosity and imagination.

Louisiana as a Place to See Birds

No less than 377 species of birds have been recorded within the boundaries of Louisiana. This is more than half of all the birds known to occur regularly in North America, north of Mexico. Only five states (California, Texas, Florida, Massachusetts, and New York) have bird lists that include more species than does that of Louisiana. But the presence here of a great array of species is not really very surprising when one considers the several factors that make Louisiana such a splendid place to see birds.

For one thing, our state's 48,523 square miles include no less than 3,346 square miles of water in the form of rivers, bayous, bays, lakes, and lagoons, and 7,420 square miles of coastal marshes. Although the east-west breadth of the southern part of the state amounts to only 397 miles, the actual shore line is 6,952 miles in length when one follows the numerous indentations formed by the many bays and sounds. The tremendous expanse of tidal beaches combines with the coastal waterways and marshes to provide an unexcelled habitat for gulls, terns, shore birds, ducks, geese, herons, and other kinds of aquatic or semiaquatic bird life. The remainder of the state possesses an assortment of hardwood alluvial swamplands, beech-oak-magnolia uplands, wide areas of pine forest, and even treeless grassy plains which are, collectively and individually, superbly attractive to land birds (see figure 1).

Possibly the greatest single factor, however, favoring Louisiana as a place to find many kinds of birds is its geographical position. It lies athwart the great Mississippi Valley migratory flyway, an avenue over which millions of birds wing their way twice a year in their annual migrations. This mass movement of a large segment of the avian population of the continent brings many northern nesting species to us in winter in incredible numbers. Others are with us simply as birds of passage, here only a few weeks in



Cypress Tree on Lake Verret STANDARD OIL CO. (N. J.)

Cypress-Tupelogum-Waterelm Subject to Deep Flooding, Pearl River Swamp

CLAIR A. BROWN

Shallow Water Cypress-Tupelogum Swamp
At Weeks Island

STANDARD OIL CO. (N. J.)

Cypress Knees and Wind-Blown Spanish Moss, Iberville Parish

CLAIR A. BROWN

The President of the Louisiana Live Oak Society, Near Hahnville, St. Charles Parish

CLAIR A. BROWN

Loblolly Pine, Union Parish T KOHARA

Longleaf Pine, Rapides Parish T. KOHARA

Virgin Water Oak-Redgum Forest, Concordia Parish T. KOHARA

Driskill Mountain, Highest Point in Louisiana (535 Feet), Bienville Parish

ROBERT E. TUCKER

Prairie North of Jennings, Jefferson Davis Parish STEPHEN M. RUSSELL

Chenierlike Woods on Grand Isle, a Haven in Spring for Incoming Trans-Gulf Migrants

FONVILLE WINANS

Black Mangrove Marsh, Brush Island, St. Bernard Parish

CLAUDE H. GRESHAM, JR.

Salt Marsh, St. Bernard Parish JAMES P. MORGAN

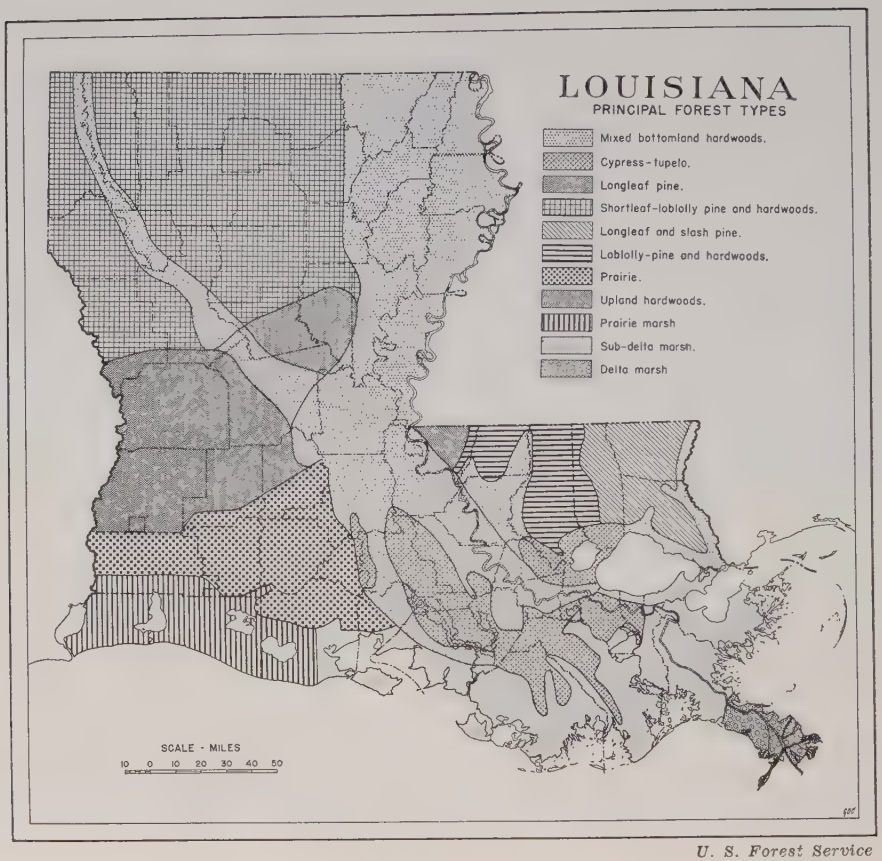
The Mighty Mississippi Meets the Sea

DAVIS AERIAL PHOTOGRAPHIC SERVICE

spring and again in fall as they pass to and from more southern winter homes. But in the period of their sojourn they add variety to our avifauna. Louisiana's geographical position also gives it nearly all of the species that make up the distinctive breeding avifauna of the southeastern United States. Its southern location affords a mild climate, which encourages many northern birds to spend their winters here, along with the many southern birds that are resident throughout the year. But the state's important advantage over other southern states results from its strategic east-west location. It receives, at least in seasons of migration, nearly all of the species of the eastern United States and, at the same time, a strong representation of western forms. The latter are notably evident in fall when the southward migrations of western species, those of the Great Plains particularly and even those of the Rocky Mountains, are probably being swung southeastward by the general southeastward trajectory of much of the continental air flow at that time. Western migrants that are occasionally displaced eastward as far as Louisiana probably have a tendency to be concentrated along our Gulf Coast by the physical barrier imposed by the open waters of the Gulf itself. This tendency accounts in large measure for the fact that the preponderance of records of western birds known from the state are from the southern tier of parishes, if not from the coastal ridges and islands themselves.

A breakdown of the 377 species of birds comprising the state list is, for several reasons, illuminating in the present connection. For one thing, it shows the great potential of the state for receiving casual visitors or accidental strays (64 species). Moreover, the analysis demonstrates the seasonal variety of birds to be found in the state.

Species recorded from the state but now extinct	3
Species believed now extirpated in Louisiana but still occurring elsewhere	2
Species introduced and now well established as permanent residents	3
Accidental visitors (species recorded only once)	32
Casual visitors (species recorded less than twelve times but more than once)	32
Transient species	48
Winter residents	104
Summer visitors (birds not known to nest in the state)	5
Summer residents (birds known to nest in the state)	51
Native permanent residents known to nest in the state	96
Species present the year around but not known to nest in the state	8
Total number of species known to nest in the state	147



U. S. Forest Service

FIGURE 1.

Another excellent illustration of the variety of the bird life in Louisiana is provided by the results of what is known as the Christmas Bird Count, a project promoted for fifty-four years by the National Audubon Society. Ornithologists throughout the United States and Canada spend a day afield counting the numbers and kinds of birds to be found in that one day in an area not exceeding fifteen miles in diameter. The census period varies slightly from year to year, depending upon which day of the week Christmas falls, but the period usually extends from the Saturday before until the Sunday after Christmas. An unlimited number of people may operate within a prescribed circle; and, of course, the larger the personnel and the more extensive the cover-

age of the census area, the greater is the opportunity to obtain a large list of species. When the first censuses were made in 1899, only a few people at a few places participated; but in the half-century that followed, more and more people became interested in birds, and the Christmas Bird Count soon developed into a nationwide ornithological endeavor. The census of 1953 involved 7,384 observers in 521 census areas in the United States and Canada. This horde of participants spent the amazing total of 18,789 party hours in the field and covered 68,715 miles (of which 13,715 were on foot) Forty-five censuses recorded 100 or more species each, and the grand total of all birds counted amounted to 9.48 million individuals.

With this explanation of the manner in which the censuses are conducted, let us now review some of the counts that have been made in Louisiana. Three censuses were made in Louisiana in 1953, all in areas where previous Christmas counts had been made—the St. Francisville-Port Hudson-False River area, the Shreveport area, and the Sabine National Wildlife Refuge-Cameron area. In the case of the first-mentioned area, this was the thirteenth officially conducted census, the eleventh to be published by the National Audubon Society. On seven occasions the number of species recorded within this circle has exceeded 100, the highest count being 114. The total number of birds observed in these one-day counts has varied from 8,862 to as high as 52,209 individuals. Annual variation in the kinds and numbers of birds seen in a particular census area often reflects cyclic changes in population densities, effects of weather, changes in roosting sites, and other natural phenomena.

The Sabine Refuge-Cameron count has now been made five times. On two occasions the very high count of 142 species was reached, and on the 1953 census the number of species seen was an unprecedented 153, the largest list of birds ever observed in Louisiana in one day in winter. This number came close to being the highest count in the nation. Ornithologists at Wilmington, North Carolina, obtained the longest list, reporting 162 species. A party on the Laguna Atascosa Refuge in Texas recorded 157 species, and a large group of observers at Los Angeles obtained 153. The count of 153 species at Cameron would have been the highest in the nation had it been made the year before, when Los Angeles and the Laguna Atascosa Refuge tied with 151 species each.

The Christmas Bird Count provides ample evidence of the general abundance of birds in Louisiana. This is particularly apparent when we consider the number of cases in which our count of individuals of a given

species was higher than anywhere else in the nation. Between 1948 and 1953 this has happened 87 times, involving no less than 50 species (Table 1). In many other instances not listed the counts in Louisiana were near the maximum for the country.

TABLE 1.

SPECIES FOR WHICH THE HIGHEST NORTH AMERICAN CHRISTMAS BIRD COUNT WAS OBTAINED IN LOUISIANA (1948-53).

Species	*Year*	*Area*	*Number*
Pied-billed Grebe	1950	St. Francisville	117
	1951	"	119
Olivaceous Cormorant	1950	Grand Isle	393
American Bittern	1951	Sabine Refuge	7
	1952	"	4*
Least Bittern	1953	"	1*
White-faced Ibis	1950	"	131
	1951	"	68
	1953	"	1,259
Snow Goose	1950	"	35,000
	1951	"	32,000
Blue Goose	1949	"	9,829
	1950	"	20,000
	1951	"	32,000
	1952	"	24,000
	1953	"	12,992
Mottled Duck	1951	"	50
American Widgeon	1951	"	50
Ruddy Duck	1950	St. Francisville	4,600
Marsh Hawk	1951	Sabine Refuge	134
Sparrow Hawk	1951	"	120
King Rail	1951	"	10
	1953	"	100
Clapper Rail	1949	Grand Isle	92
	1950	"	95
Sora	1949	"	15

* Tied with another census for high count.

TABLE 1 (*continued*)

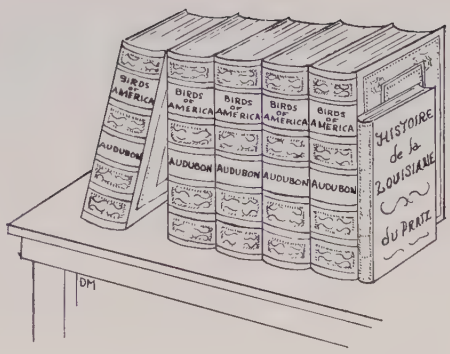
Species	*Year*	*Area*	*Number*
Killdeer	1950	St. Francisville	362
American Woodcock	1948	"	3
Solitary Sandpiper	1948	"	1
Greater Yellowlegs	1949	Sabine Refuge	59
Pectoral Sandpiper	1950	"	3
Dowitcher (sp.)	1950	"	450
Gull-billed Tern	1952	"	32
Forster Tern	1949	Grand Isle	660
	1950	"	500
Barn Owl	1953	Sabine Refuge	14
Barred Owl	1948	St. Francisville	7
	1949	"	23
	1950	"	12
	1951	"	12
Chuck-will's-widow	1950	Grand Isle	1*
Red-bellied Woodpecker	1950	St. Francisville	105
Yellow-bellied Sapsucker	1948	"	41
	1950	"	38
	1951	"	18
Rough-winged Swallow	1951	"	50
	1953	"	112
Winter Wren	1951	"	29
Long-billed Marsh Wren	1950	Sabine Refuge	40
	1952	"	42
Short-billed Marsh Wren	1953	"	57
Brown Thrasher	1948	St. Francisville	86
	1949	"	73
	1950	"	129
	1951	"	80
	1953	"	106
Hermit Thrush	1948	"	70
Blue-gray Gnatcatcher	1950	Sabine Refuge	198

* Tied with another census for high count.

TABLE 1 *(concluded)*

Species	*Year*	*Area*	*Number*
Ruby-crowned Kinglet	1948	St. Francisville	244
	1949	"	177
	1950	"	330
	1951	"	260
	1953	"	273
Water Pipit	1951	"	605
Loggerhead Shrike	1950	"	209
	1951	Sabine Refuge	324
Solitary Vireo	1948	St. Francisville	7
Orange-crowned Warbler	1948	"	22
	1950	Grand Isle	57
	1951	St. Francisville	31
	1953	"	47
Yellow Warbler	1953	Sabine Refuge	2
Black-throated Gray Warbler	1952	"	2
Yellow-breasted Chat	1948	St. Francisville	1
Black-capped Warbler	1952	"	5
	1953	Sabine Refuge	5
Boat-tailed Grackle	1949	Grand Isle	2,375
	1951	Sabine Refuge	2,000±
	1952	"	1,232
Leconte Sparrow	1951	"	16
Sharp-tailed Sparrow	1953	"	25
Seaside Sparrow	1950	Grand Isle	640
	1951	Sabine Refuge	68
	1952	"	56
	1953	"	190
Vesper Sparrow	1949	St. Francisville	57
Swamp Sparrow	1948	"	168

History of Louisiana Ornithology



ONE OF THE earliest naturalists of competence to visit Louisiana was Antoine Simon Le Page Du Pratz, who came to New Orleans in 1718 and spent sixteen years in various parts of the Louisiana province. In 1758, subsequent to his return to France, the first edition of his now famous work, *Histoire de la Louisiane*, was published, setting forth "a description of the countries that lie on both sides of the River Mississippi, with an account of the settlements, inhabitants, soil, climate, and products." M. Le Page Du Pratz was a keen observer and, consequently, aside from giving us vivid accounts of life in this section of the country in a critical period of its development, he told of approximately 60 different kinds of birds that were known to him, including the then common Passenger Pigeon and Carolina Parakeet.

In the same year that M. Le Page Du Pratz's narrative first appeared in print, the great Swedish biologist, Carolus Linnaeus, brought forth the tenth edition of his *Systema Naturae*, in which he laid the foundation of our present international system of zoological nomenclature. The twelfth edition of this classic, Volume I of which appeared in 1766, contained references to Louisiana birds, as well as the first acceptable technical description of the Rose-breasted Grosbeak and Loggerhead Shrike, each of which was given the specific name *ludovicianus*, which means "of Louisiana." Linnaeus' descriptions of these two species were based only indirectly on Louisiana specimens since he himself did not visit Louisiana, nor indeed any part of America.

Between 1760 and 1790 other great ornithological works appeared that incorporated original descriptions, general accounts, or illustrations of Louisiana birds, including: Mathurin Jacques Brisson's *Ornithologia* in six volumes in 1760; Edme Louis D'Aubenton's drawings in his *Planches Enluminées d'Histoire Naturelle* in 1765; and John Latham's *Index Ornithologicus* in two

volumes in 1790. The last-named work contained the first technical description of the Carolina Wren, which, despite the bird's vernacular name, was based on specimens from Louisiana, as its scientific name, *Thryothorus ludovicianus*, implies.

Although the famous artist-ornithologist, Alexander Wilson, made reference to Louisiana birds in various parts of his nine-volume classic, *American Ornithology* (1808-1814), he apparently spent only parts of May and June, 1810, in the state. It was the illustrious John James Audubon who contributed the first real literature and extensive scientific knowledge concerning Louisiana birds. Endowed with magnificent artistic skill, an indomitable spirit, and a tenacity of purpose, Audubon set forth early in life to delineate faithfully the birds of America. His achievements toward this end rightfully earned him lasting fame and recognition as one of the greatest naturalists of all time.

Audubon never stayed long in one place, for he was continually searching for new birds on expeditions that led him north to Labrador and west to the Yellowstone country, as well as incessantly back and forth across the eastern and southern states. He was compelled to go many places, to England to find an engraver of the double-elephant folios of his drawings, *Birds of America* (1827-1838), and even to Scotland and France to peddle subscriptions to the work. Yet despite these journeys he spent several periods of his life in Louisiana, a place that he loved above all others. Particularly dear to him was the Feliciana country, with its deep beech-magnolia ravines, its river swamps, and the sand-lined shores of Bayou Sara. This he called his "Happyland."

Of the 435 plates that make up Audubon's original double-elephant folio, at least 167 are definitely known to have been done in Louisiana. No less than sixty-six of these were executed in West Feliciana Parish, at either "Oakley" or "Beech Woods" plantations. It was here, too, that he made many of his observations on the lives and habits of birds that later were incorporated in his *Ornithological Biography*. The first edition of this work appeared in five volumes, 1831-1839, as the letterpress supplementing the mammoth reproductions of his original drawings (untrimmed 29½ x 38½ inches). Later, essentially the same text was integrated with the reproduction of the *Birds of America* in miniature, octavo size, the first edition of which appeared in five volumes between 1840 and 1844.

Audubon's last trip to Louisiana was in the spring of 1837, when he and his friend Edward Harris made a round trip by government cutter from

New Orleans down to the mouth of the Mississippi and westward along the Gulf Coast to Galveston, stopping frequently en route to shoot birds on the coastal islands and in the expansive coastal marshes. It was on April 1, when the ship was anchored in Southwest Pass, that Audubon saw a pair of Harlequin Ducks, the only ones ever recorded in Louisiana. On April 3 the expedition entered the Barataria Bay area, where in the following three days the ornithologists listed 104 different species of birds. On Isle Derniere Audubon saw 15 American Oystercatchers, bringing down two of them to establish the westernmost record of the species in this state. On Marsh Island, in the few days that they were there, the naturalists observed 97 species of birds. Many of the birds seen along the Louisiana shore were transient land birds that had just arrived from across the Gulf, as Audubon astutely noted in his journal. This seems to be the first clear reference in ornithological literature to the phenomenon of trans-Gulf migration.

Audubon lived until 1851, dying at the age of sixty-six. His impact on the science of ornithology was immense. Although he himself was more of an artist-naturalist than a scientist, he gave the world, through his talents, his indefatigable labors, and his hardships and privations, a monumental work on the bird life of this country that provoked further research and opened up an era of intensive ornithological inquiry and achievement. Soon to follow him in North America were Thomas Nuttall, Spencer Fullerton Baird, Thomas Brewer, Robert Ridgway, Elliott Coues, and J. A. Allen, whose scientific writings in the fifty years following Audubon's death filled in many of the details concerning North American birds left blank by the great "American Woodsman."

In the four decades following Audubon's farewell visit to his beloved Louisiana, naturalists devoted little attention to our avifauna. This is partially attributable to the War Between the States and to the hectic conditions that ensued. In 1881, however, Frank W. Langdon, writing in the *Journal of the Cincinnati Society of Natural History*, published an annotated list of 83 species of birds seen by him in West Baton Rouge Parish. One year later Charles Wickliffe Beckham wrote a similar article, appearing in the *Bulletin of the Nuttall Ornithological Club*, which described the occurrence of 86 species of birds recorded in the vicinity of Bayou Sara, Audubon's old stamping grounds. In 1887 Beckham supplemented this list, including notes on 27 additional species. By this time a resident of New Orleans, Joseph Gustave Kohn, had begun to assemble a collection of bird skins, most of which are

now in the Tulane University Museum. Some of his specimens proved to be of species previously unknown in the state. As early as 1887 a series of short notes by Kohn and several other resident and nonresident ornithologists, began to appear in *The Auk*, the official organ of the already well-established American Ornithologists' Union.

Just prior to 1900 four highly competent naturalists appeared on the Louisiana ornithological scene. They were H. H. Kopman, Andrew Allison, George E. Beyer, and Edward A. McIlhenny. Each contributed greatly to the knowledge concerning Louisiana birds. In 1900 Beyer published the first list of the birds of the state, which, on the basis of our present-day definition of a species, would include a total of 315 species. In a series of papers begun in 1906 and concluded in 1915, Beyer, Allison, and Kopman jointly compiled a list of Louisiana birds, this time including only 310 species, since several dubious entries of the previous list had been deleted. Prior to the completion of this résumé, Allison wrote a special paper on the bird life of West Baton Rouge Parish, and Kopman was author of thirteen papers, including one on the birds of Jefferson Parish and several highly important accounts of the migration of birds in the state. To McIlhenny we are especially indebted for his great work in the field of wildlife conservation and for his extensive bird-banding accomplishments. According to records on file in the U. S. Fish and Wildlife Service, McIlhenny is credited with having banded in his lifetime the amazing total of 189,289 birds, mainly ducks. Data obtained from returns on these bandings were eminently important in plotting migratory routes followed by North American birds.

The year 1918 saw the appearance of the first list of the birds of Louisiana to be published by the state—*The Birds of Louisiana* by Stanley Clisby Arthur. It was issued by the Department of Conservation, which then included what is now the Wild Life and Fisheries Commission. This brochure included some species which are not now admitted to our state list because of insufficient evidence in support of their occurrence here. Even without these, the list totals 334 species. In 1931 Arthur prepared a full-length book on the birds of the state, and it, too, was published by the former Department of Conservation. This work is excellent for its interesting life history accounts, its explanations and derivations of colloquial names, and the fact that it constitutes the first attempt to summarize in book form available information on the seasonal occurrence of Louisiana birds. The demand for this publication was so great that the supply was quickly exhausted. Since Mr. Arthur was by that time

submerged in numerous historical projects, including the preparation of his biography of Audubon (by far the best one-volume account ever written on the life of the great naturalist), the Department of Conservation commissioned Harry C. Oberholser of the Bureau of Biological Survey, now the U. S. Fish and Wildlife Service, to undertake a complete revision of the 1931 book. This project culminated in the publication in 1938 of an 834 page treatise by Oberholser entitled *The Bird Life of Louisiana.* Again, because of a widespread interest in birds on the part of the people in Louisiana as well as those outside the state, the demand exceeded the supply, and this book also was soon unavailable for further distribution. Oberholser's work carefully summarizes the relative abundance of the birds of the state as it was known up to the beginning of 1938, giving an exhaustive listing of locality records, citations of specimens of Louisiana birds extant in the major museum collections of the country, some life history notes, and an excellent bibliography of nearly all papers relating in any way to the birds of the state published up to that time.

Unfortunately, the compilation of *The Bird Life of Louisiana* was completed when the most active period in the history of Louisiana ornithology was just getting under way. Though the Museum of Zoology at Louisiana State University was organized in 1936, its great collections had barely been started at the time of the publication of Oberholser's book. So significant was the expansion of this institution and its programs in the years that followed, that a separate chapter will be devoted to its activities. A later event of major importance in the history of Louisiana ornithology was the founding of the Louisiana Ornithological Society in 1949 (see page 95) under the enthusiastic leadership of Earle R. Greene, with the support of a corps of ornithologically-minded people from various parts of the state. The quickened tempo of field work resulting from these two developments has already produced a wealth of new information adding to the distributional and other data given by Oberholser. Indeed, no less than 29 species of birds have been added to the state list in the sixteen years since 1938, and it would not be surprising, in view of the greater number of active ornithologists now resident in Louisiana, to witness the addition of an equal number in the next sixteen years.

Many people have contributed to our knowledge of Louisiana birds in the recent period. Most notable are the members of a small but exceedingly energetic and capable group of students who have attended Louisiana State

University and have been instrumental in the development of its Museum collections and the execution of its ornithological research. Likewise of great importance have been the activities, collectively and individually, of the members of the Louisiana Ornithological Society. Field ornithologists who are especially deserving of commendation for the role they have played in the recent development of the ornithology of the state are: Earl Atwood, Samuel A. Arny, Donald M. Bradburn, Jas. Hy. Bruns, Fred J. Buchmann, Austin W. Burdick, Thomas D. Burleigh, John Chapin, H. B. Chase, Jr., P. A. Daigre, J. L. Dorn, Miss Rose Feingold, John Gee, Leslie Glasgow, Earle R. Greene, G. Dale Hamilton, Thomas R. Howell, Mrs. Frances C. James, Horace H. Jeter, Mr. and Mrs. Robert W. Krebs, R. B. Lea, John Lynch, Edward A. McIlhenny, M. L. Miles, Oliver Miles, Mr. and Mrs. R. B. Moore, Buford Myers, Robert J. Newman, Ted O'Neil, Sam Ray, Chandler S. Robbins, Royston R. Rudolph, Charles R. Shaw, J. R. Stewart, Jr., James Tanner, Robert E. Tucker, H. Eugene Wallace, and Richard Yancey.

Of special significance has been the work of Horace H. Jeter. His thorough field studies in the northwestern parishes have already done much to fill the gaps in what was until recently the least known area of the state ornithologically. Still virtually unworked are the northern Florida parishes and the parishes in the northeastern, central, central-western, and south central parts of the state. Actually, aside from the various state and federal wildlife refuges, the only areas that have had good year-around coverage by a resident ornithologist are the vicinities of New Orleans, Avery Island, Baton Rouge, Monroe, St. Francisville, Jonesboro, and Shreveport. Although none of these border on the Gulf of Mexico, frequent field trips, amounting in the course of time to year-around coverage, have been made to Cameron and Grand Isle, the only two readily accessible localities on our coast.

The Louisiana State University Museum of Zoology

THE ORGANIZATION in 1936 and the subsequent development of the Louisiana State University Museum of Zoology[1] inevitably led to advances in the more technical aspects of the ornithology of the state. In less than two decades the Museum's bird collections have grown from a nucleus of six old unlabelled specimens of unknown origin to an array of over 20,000 skins. These collections include specimens of all the birds of Louisiana, examples of the vast majority of those of the United States and Canada, extensive and immensely important series of Mexican birds, and, finally, representatives of additional families and genera from many places throughout the world. Although a nearly complete series of native birds, mounted in the most lifelike poses that can be achieved by the art of taxidermy, is featured in the Museum's exhibit halls, this assemblage, open to the general public, is but a fractional part of the entire collection. The ornithological material consists mostly of study skins, prepared in a very precise manner, each with an attached label giving the exact locality where the bird was obtained, the name of the collector, the date of collection, the sex, condition of the gonads, amount of fat, and often the weight and other pertinent data (fig. 2). The skins are carefully classified, catalogued, and systematically arranged in steel cabinets, where they are periodically fumigated and given every possible curatorial care to insure their safe preservation (fig. 3). The oldest specimen in the

[1] Under the University's expanded museum program, the Museum of Zoology is now set up as a research division within the Museum of Natural Science. Although the two museums are intimately tied together administratively and are both housed under the same roof, the primary functions of the Museum of Natural Science are related to exhibition and public education. The public displays, many of which are at this time under construction, contain botanical and paleontological, as well as zoological, materials.

Museum is that of a Passenger Pigeon, taken near London, Ontario, in 1860, a gift by a Canadian ornithologist who was interested in the Museum's welfare. This specimen is as well preserved as those collected in recent years.

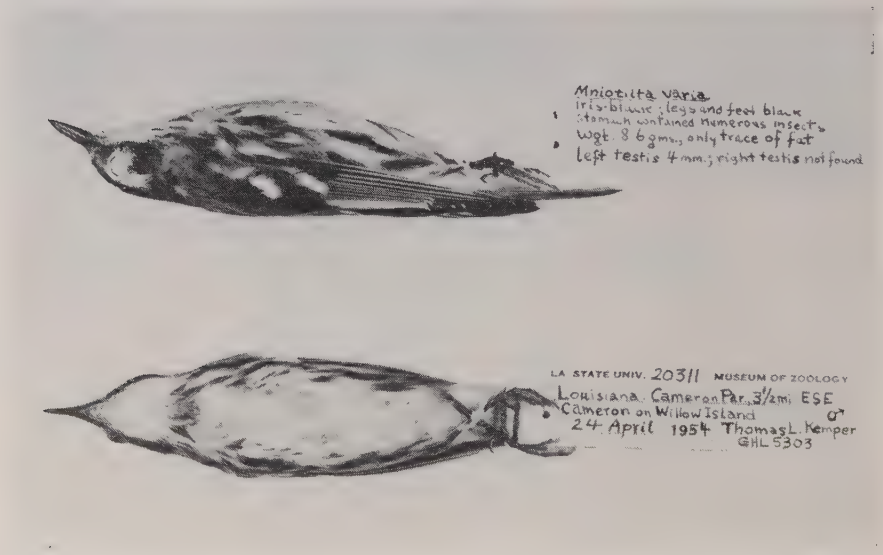

Mniotilta varia
iris-brown; legs and feet black
stomach contained numerous insects
Wgt. 8.6 gms., only trace of fat
left testis 4 mm.; right testis not found
LA. STATE UNIV. 20311 MUSEUM OF ZOOLOGY
Louisiana: Cameron Par., 3½mi. ESE
Cameron on Willow Island ♂
24 April 1954 Thomas L. Kemper
GHL 5303

Fig. 2. A typical museum study skin and its label.

Study collections are of immense scientific value. The preservation of specimens provides a means whereby the validity of a record can be checked and rechecked in the future. On January 2, 1954, for example, a Black-legged Kittiwake, the first ever known in the state, was seen and identified independently by two parties near the village of Cameron. In view of the competence of the observers who saw the bird, it would seem that little doubt could ever be attached to the record. Yet, in years to come, other ornithologists evaluating the sight record might well have questioned its validity, just as we now question whether Audubon was correct in his vague claim that he saw a kittiwake near the Florida Keys. Fortunately, there will be no occasion for doubting the recent kittiwake record, for the bird was collected and its skin preserved in the Louisiana State University Museum. Even though ornithologists are not able to collect every bird they see (nor do they wish to do so), an attempt is made whenever possible to corroborate all unusual or extralimital records of birds by a preserved specimen. Of course, in order

FIG. 3. Photographs of portions of the interior of the Louisiana State University Museum of Zoology. *Upper*: A few of the steel cabinets that house the Museum's extensive research collections. *Lower*: A close-up view of part of the contents of three specimen trays.

to be able to collect nongame birds that are protected by law, ornithologists must procure special scientific collecting permits from both the state and federal governments.

Scientific study collections provide the material for important investigations relating to the classification of birds. Study skins can be assembled and conveniently handled in making detailed comparisons and measurements of structural parts. Despite the fact that such studies could not be undertaken in the absence of a large assemblage of specimens, the museum worker is often asked why it is necessary to collect more than one or two specimens of each kind of bird or why it is necessary sometimes to have whole trays of specimens of the same species. The answer is simple. The zoologist is interested in determining the range of variation in each species of animal. Variation expresses itself in several ways. Just as there are no two human beings in the world that are absolutely identical, neither are there any two birds of a given species that are identical. To find out the limits of this individual variation in a species, it is necessary to study critically a large series of specimens. But there are still other kinds of variability. In some species age variation is pronounced. A Bald Eagle, for example, requires from four to five years to acquire its pure white head and white tail (see Plate XIV). Individuals of intermediate age show various degrees of intermediacy in the amount of white on these parts. There is also the matter of sex differences, or what is called sexual dimorphism. The male Cardinal is a brilliant red, but the young male and the female are drab in their attire (see Plate XXXV). Seasonal changes account for additional variations, as we observe in the male Scarlet Tanager, which is a combination of scarlet and black in summer but a dull green and black in winter (see Plate XXXIV). Variations in a species resulting from wear and fading and from dichromatism are discussed in the section on feathers and molt. The student of variation in birds must be aware of all these factors and be prepared to recognize them before he can pass on to the most important study of all, the analysis of geographic variation.

When a series of specimens of a certain species is collected throughout its range and careful comparisons are made of the various population samples represented, marked differences are often noted (fig. 4). We designate these geographically variant populations within the species as subspecies or geographic races and accord them minor nomenclatural recognition. Sometimes the subspecific distinctions are minute, being nothing more than an average

FIG. 4. Photograph showing geographical variation in size and color in females from three populations of the Boat-tailed Grackle. (A) *Cassidix mexicanus mexicanus*, of southern Mexico; (B) *C. m. prosopidicola*, of northeastern Mexico, southern Texas, and the western part of the northern Gulf Coast; (C) *C. m. major*, of the central-northern Gulf Coast, Florida, and the southern Atlantic Coast. (Reprinted from Lowery, "A New Grackle of the *Cassidix mexicanus* Group," *Occas. Papers Mus. Zool. Louisiana State Univ.*, 1, 1938:9.)

difference of a few millimeters in length of the wing, bill, or tail, or a slight gradation in color from one locality to another. On the other hand, subspecific variations may be of surprisingly great magnitude—so great sometimes that they would suggest that two separate specific entities were involved, were it not for the fact that the observed differences are found to grade imperceptibly from one extreme to the other through a chain of interbreeding populations. But when two or more populations differ, if ever so slightly, yet occur in the same place without interbreeding, they are accorded full specific rank. It is through the process of geographic variation that most vertebrate zoologists think new species arise, particularly when the survival of the variation is favored by natural selection and when its spread throughout the entire species is prevented by physiographic barriers that produce isolation of populations.

Thus, the study of geographic variation in birds is of interest per se, as well as for the light it sheds on problems of avian taxonomy and on the question of species formation. In addition, a study of this type of variation in a single species enables the student of bird migration to trace the individuals of a certain geographical area from their breeding grounds along their migration routes to their winter homes. For example, we know that the Palm Warblers that breed from Ontario, central Quebec, and Newfoundland south to southern Nova Scotia, New Brunswick, and Maine differ from the Palm Warblers that breed in central Canada and the north central United States. The latter population of the species is decidedly paler than its eastern representative, the yellow of the under parts being confined mainly to the throat and to the lower belly and under tail coverts (see Plate XXXI). The knowledge of this simple fact, arrived at by examining hundreds of specimens from known breeding localities, led to a still more interesting discovery when winter-taken specimens were examined. Then it was found that the pale western population winters mainly from southeastern Louisiana to southern Florida and from the Bahamas to the Greater Antilles and Yucatán, while the brightly-colored eastern population tends to migrate more southwesterly and to winter mainly along the central-northern Gulf Coast as far west as Texas. To a considerable extent the migratory paths of the two subspecies cross each other diagonally, and, although their winter ranges overlap in part, they are largely complementary, a fact that would have escaped detection had not studies of geographic variation in the breeding populations of the Palm Warbler been made.

In the winter of 1952-53 there was a great invasion of western birds into the eastern United States. The effects were noticed in Louisiana possibly to a greater extent than anywhere else, which is not surprising in view of of our geographical location. Attention was naturally focussed on the large number of Great Plains and Rocky Mountain species that either appeared here for the first time on record or else in unprecedented numbers. The fact that the zoologist can often tell from where a bird comes by minor characteristics of its color and size greatly aided in the analysis of this invasion of western birds. Two notable cases may be cited by way of illustration. A Yellow-bellied Sapsucker collected near Baton Rouge on March 7, 1953, possessed a red nape, which marked the bird unquestionably as an example of the Rocky Mountain subspecies. It could have originated no farther east than the 104th meridian, which passes through eastern Colorado and New Mexico; east of that line the species lacks the red on the nape. Another interesting specimen taken in Louisiana in this eventful winter was a Hermit Thrush shot at Grand Isle. The bird was collected because it appeared to be unusually small and grayish above. On comparison of its preserved skin with a large series of Hermit Thrush skins in the Museum from various parts of North America, the bird proved to be an example of the population that breeds in the high coniferous forests from southern British Columbia to southern California. The bird was far east of its known winter range when it appeared in Louisiana. These are but two examples of the way studies in geographic variation of birds reveal facts pertaining to their migratory movements.

The extensive study collections in the Museum of Zoology are already a storehouse of facts relating to Louisiana birds, as well as the bird life of the entire southern United States. But the activities of the Museum are by no means confined to the acquisition of collections. Staff members and a small corps of graduate students are constantly engaged in other ornithological pursuits. Life history studies are being made of selected species. Thousands of birds have been banded by Museum personnel to facilitate studies of the behavior of individual birds, as well as to learn about their molts, their longevity, their mating habits, their intraspecific relationships, and their movements. There is indeed no greater need in North American ornithology today than for better information on the life habits of our birds, for some of the commonest species are inadequately known.

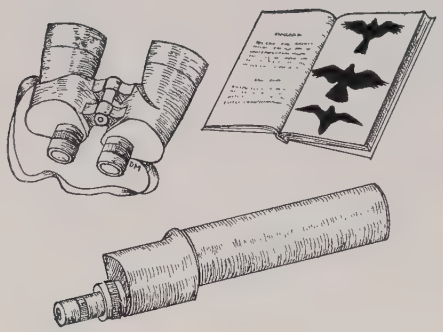
Still another activity of the Museum has been its investigations into the intricacies involved in the migration of birds. This has been concerned not

only with local field studies of the phenomenon of migration in Louisiana and in the general area of the Gulf of Mexico but also with problems of migration throughout North America. It was in 1945 at the Museum that the lunar method of studying nocturnal migration on a continental basis was devised. This technique employs a statistical analysis of volume and direction of night migration, based on the counts of birds passing before the moon as seen through small telescopes. In brief, the method hinges on the principle that the sliver of open sky through which a bird must pass to be seen silhouetted against the moon is a measurable unit of space, the interceptive potential of which depends on the altitude of the moon at the time of the observation. The number of birds seen in this changing unit of space provides a statistical index to the total number of birds passing through a larger unit of space of standard dimensions. Moreover, the direction of flight of the birds seen passing before the moon can be determined with considerable accuracy even though what we actually see through the telescope is only a two-dimensional projection of the bird's flight path against the lunar disc. By envisioning the moon as an upright clock and recording the pathway of a bird as clock co-ordinates, and by applying simple trigonometric principles, we are enabled to ascertain the true direction of flight. When this is done for the scores, sometimes hundreds, of birds seen before the moon in one night at a given observation station, we are furnished with statistical insight into the probable average direction of flight for all the birds passing overhead that night in the vicinity of that station.

This co-operative study of night migration, in the last five years alone, has resulted in thousands of hours of observation by over 2,400 collaborators at more than 300 stations operating throughout most of North America. At the end of each season of migration the leaders at the various stations send their lunar counts to the Museum for processing and analysis. Several hours of complicated mathematical computations are required before the raw data obtained in one night at a given station are ready for comparison with results from other stations on the same or on different nights. Despite the difficulties involved in the analysis of lunar counts, the method has proved to be a successful means of deciphering some of the mysteries that have long surrounded the actual mechanics of night migration; otherwise the passage of birds through the night sky is veiled in darkness. Already many discoveries have been made, the most notable of which relate to the nightly temporal pattern of the flights (that is, the variation in the hour-to-hour volume of migration);

to geographic variations in the volume of migration; to flight directions and their relationship to topographical features of the terrain; and to correlations between direction of flight and meteorological conditions. Any one of these basic facts so far learned in regard to the phenomenon of night migration more than justifies the tremendous effort that has gone into the work.

The Museum of Zoology has exerted still another influence in the development of the ornithology of the state through the instruction that its staff has given to a host of undergraduate and graduate students. These students are given every opportunity to make use of the collections, both to familiarize themselves with birds from many parts of the world and to carry out special research studies. An elementary course in ornithology, which is taught in the Museum, is designed to acquaint the student with the basic principles of avian biology. The classes make regular weekly field trips, and by the end of the course the students are held responsible for the correct identification in the field or in the Museum of approximately 175 species of birds. With this rather broad fundamental knowledge of the subject, the students are prepared to continue the pursuit of ornithology as an absorbing and pleasurable hobby for the remainder of their lives; and, in doing so, many of them make noteworthy contributions to the science itself.



How to Identify Birds

THE FIRST STEP in the pursuit of ornithology is to learn to identify at least most of the common birds, particularly those in the vicinity of the home and nearby countryside. The greatest progress in this direction is made after the beginner acquires some degree of familiarity with the general scheme of classification of birds into natural groups and is able to say that he knows at least one species in each of the main families. At that stage the illustrated bird book serves great usefulness, for in it the observer finds pictures and textual clues that lead him toward his goal. It is logical to expect the aggregation of species in any one family of birds to be very similar in their general features, such as posture, body shape, proportions, and behavior characteristics. Wrens, for instance, are elusive, small to tiny, drab brownish birds, with rather long and slightly decurved bills and usually rather short tails, which they often hold at a jaunty, upward tilt. When the beginner can say with confidence to himself that a certain bird in question is a wren, the job of identification is almost done, for there remains only the problem of deciding what kind of wren. This is done usually by looking for special markings that one particular species possesses and all others lack.

The beginner will find that identification becomes increasingly easy as each new bird is met and its identity solved. For example, after the Wood Thrush is recognized and carefully studied as to shape, size, and behavior, the student has some conception of thrushes in general, and his problem is simplified when he is confronted with other species of this family. He sees later what is obviously a thrush but one lacking the prominent black spots on the breast and the reddish-brown head of the bird with which he has previously made acquaintance. He may experience difficulty at first in deciding if his new bird is a Veery or whether it is a Gray-cheeked, Olive-backed, or Hermit Thrush, but at least he knows it is a thrush other than the Wood

Thrush. The bird in question has an olive-colored back in contrast to its dull, reddish-brown tail. The student soon learns that a Hermit Thrush has such markings, while the other species of thrushes have the tail and the back uniformly colored. And thus the beginner becomes aware of the diagnostic or "key" characters of each species, one after another, until he can recognize them all—even the most difficult species, such as the flycatchers, sandpipers, and sparrows.

When a new bird is encountered, the bird student should attempt to formulate a mental picture of it as quickly as possible, before it disappears from view. There are certain features in particular for which he should look. Are there any conspicuous markings? If so, exactly where are such markings located? Does the bird have a yellow rump patch, a white throat, a black crown patch, or a red malar stripe? Does it have an eye ring or an eye stripe? If it does, what color is this marking? Are wing bars present, and how many are there? What is the shape of the tail—forked, emarginate, graduated, rounded, or square? Are the outer tail feathers white, only tipped with white, or simply like the others? Are there bars or some other distinctive pattern on the tail, such as a terminal band? Is the bill conical or thin and pointed, compressed or depressed, decurved or recurved? The diagrams in Figure 5 illustrate some of these and other features involved in the questions that a bird observer should immediately ask himself before consulting a book. After the bird is gone there will be ample time for a perusal of the book in search of a species that fits.

No less important in field identification are features of behavior and posture. Does the bird in question wag its tail like an Eastern Phoebe, flit its wings nervously like a kinglet, walk like a Water Pipit, or hop like a sparrow? If it is on the trunk of a tree, does it climb head upward, holding its tail against the bark like a woodpecker or Brown Creeper, or does it run along upside down under limbs with its tail held away from the tree? If the bird is on the water, does its body float high like a duck's or mainly submerged as in the case of a cormorant? When taking to the air, does it spring up like a Mallard, or does it run along the surface for some distance as does an American Coot?

Call notes and songs often provide clues to identification in instances when a bird cannot be clearly seen because it is hidden in a tree. Indeed, far more small land birds are heard than are generally seen. Learning to recognize call notes and songs depends in some measure on the person and his

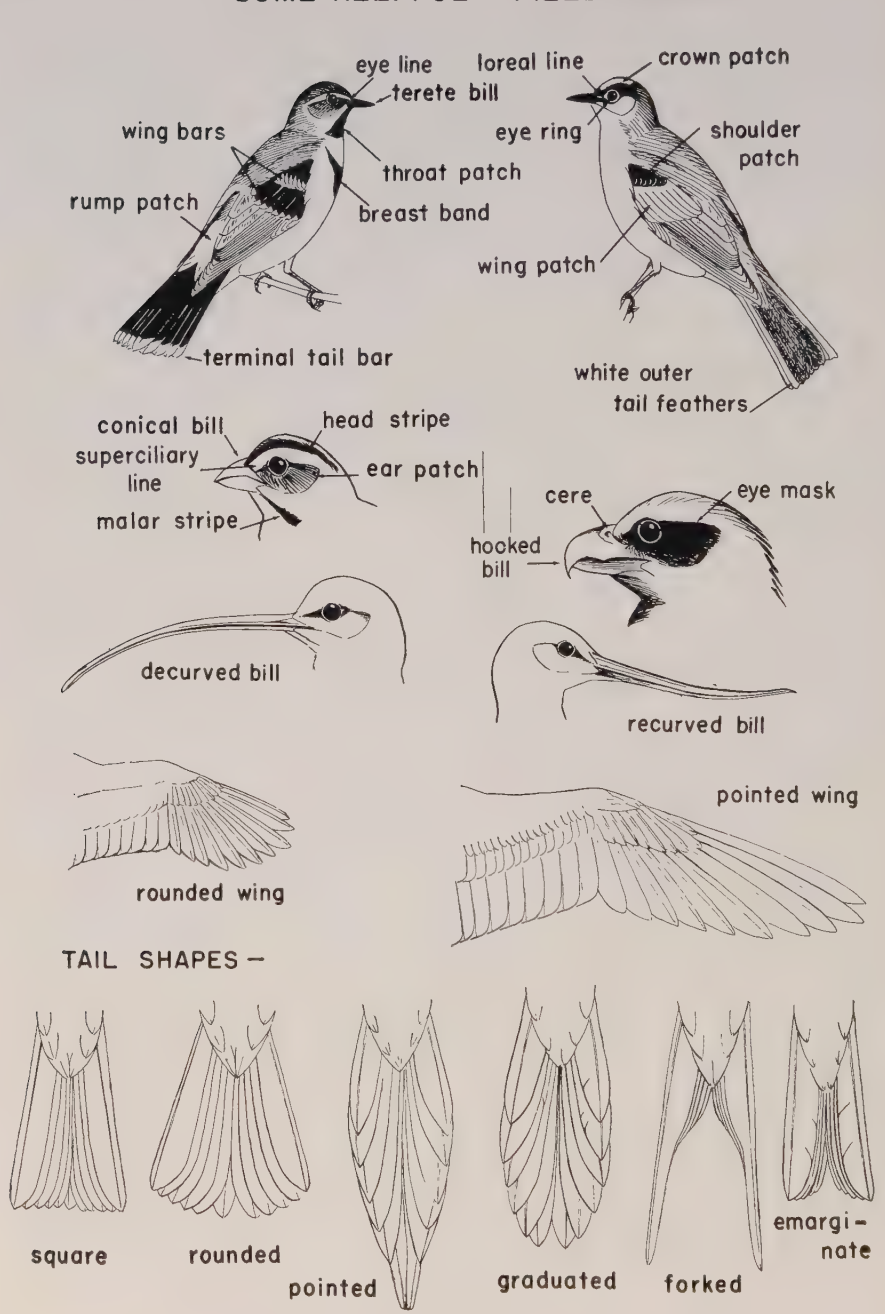

SOME HELPFUL FIELD MARKS
eye line
terete bill
wing bars
throat patch
rump patch
breast band
terminal tail bar
loreal line
crown patch
eye ring
shoulder patch
wing patch
white outer tail feathers
conical bill
head stripe
superciliary line
ear patch
malar stripe
cere
eye mask
hooked bill
decurved bill
recurved bill
rounded wing
pointed wing
TAIL SHAPES –
square
rounded
pointed
graduated
forked
emargi-nate

FIGURE 5.

ability, not only to hear sounds, but also to classify them. A common and highly useful practice among ornithologists is to translate bird calls into a simple phonetic expression. A Red-winged Blackbird seems to sing *ogurgleeee*; a Chestnut-sided Warbler, "I want to see Miss Beecher"; a Tufted Titmouse, "Peter, Peter, Peter." The names of some birds are conveniently derived from a phonetic rendering of their call notes, as in the case of a phoebe, pewee, chickadee, and others. Graphic representations of songs are also helpful, even when they may have meaning only to the one who devises them. To my ears the song of the Black-throated Green Warbler can be expressed, as it was done by John Burroughs, by two straight lines, a "V," and another line: ——— ——— V ———. The use of descriptive words to characterize songs helps one to remember them. Among numerous words of this kind are: *ascending*, *buzzing*, *chattering*, *discordant*, *double-toned*, *flutelike*, *gurgling*, *liquid*, *metallic*, *nasal*, *plaintive*, *rattling*, *strident*, *slurring*, *twittering*, *throaty*, *weak*, and *warbling*.

In identifying a bird it is also immensely important to be aware of its known status in the area. If a beginner discovers, for example, what he believes is a Masked Duck, he should be immediately suspicious of his identification, for this tropical species has only once been recorded in Louisiana in well over one hundred years of observation by scores of ornithologists. Closer inspection is likely to disclose that the duck in question is a Ruddy Duck, a common winter resident in the state. Similarly, if the beginner tentatively identifies in January what he believes to be an Olive-backed Thrush, he should scrutinize the bird further, for there are no unquestionable records of this species being in Louisiana between November 16 and April 4. This is not to say that it is impossible for an Olive-backed Thrush to occur in Louisiana in January. However, despite the fact that unusual occurrences of birds are by no means infrequent, the probabilities are strongly against it. While the bird in question may be an Olive-backed Thrush, it is more likely the similar-appearing Hermit Thrush, which winters commonly in Louisiana, arriving on or about October 1 and remaining sometimes until as late as May 15. Consequently, a statement of the usual season of occurrence is given in each species account, and this information, together with the extreme dates of occurrence, is summarized graphically for the species of regular occurrence in the charts beginning on page 507.

Since this book is designed merely as an introduction to Louisiana birds and since there is a limitation on the amount of space that can be devoted to

each species, many interesting facts must be omitted. The serious student is urged to supplement what he finds here with readings in other bird books. If he is desirous of pursuing his studies outside of the state, he is especially urged to obtain a copy of Peterson's *A Field Guide to the Birds* [of the eastern United States] or *A Field Guide to Western Birds.* These are pocket-sized books, profusely illustrated by the author with color plates and line drawings. Despite more than twenty-five years of almost daily experience in the field identification of birds, I constantly refer to Peterson's *Guides*, for they superbly and succinctly set forth, better than any other single books ever written, the diagnostic field characters of birds in nearly all their variations.

Besides a field guide, there are two other valuable aids to the identification of birds. One is a good pair of field glasses. Ornithologists find that 6 x 30 or 7 x 35 prism binoculars are ideal. Anything less than six power is generally inadequate, and glasses with magnifications over eight power are either too heavy, too costly, or else have insufficient light-transmitting qualities. The amount of light reaching the eye of the observer is determined by the diameter of the objective lens and the ratio of this diameter to the magnification. The relative brightness afforded by a binocular is computed by dividing the power into the diameter of the objective lens and squaring the quotient. The added advantage in magnification of an 8 x 30 over a 7 x 35 is more than offset, under adverse light conditions, by the fact that the latter provides a much brighter image. Factory "coating" of lenses, when it is done inside and out—that is, to all lens surfaces—greatly increases the brilliance of the image. Second-hand, but excellently reconditioned, binoculars are often obtainable at reasonable cost, but care should be taken to deal with a reputable concern. A good pair of binoculars will not only facilitate identification but will also make the observer's experiences in watching birds infinitely more enjoyable.

Almost as important as a field guide and binoculars, is the ability of the observer to make a noise simulating a bird in distress. This is most effectively done by placing the fingers or the back of the hand against the lips and effecting a squeaking sound. Hawks, owls, some shore birds, and nearly all small perching birds, will fly toward the source of the sound, exhibiting great excitement and curiosity. When the observer is at least partially concealed, such birds as titmice, chickadees, and kinglets will sometimes alight on branches only a few feet away, scolding vociferously and thereby exciting and drawing up other species nearby in the forest or thicket. The technique operates most successfully in winter, when the largest number and greatest variety of birds

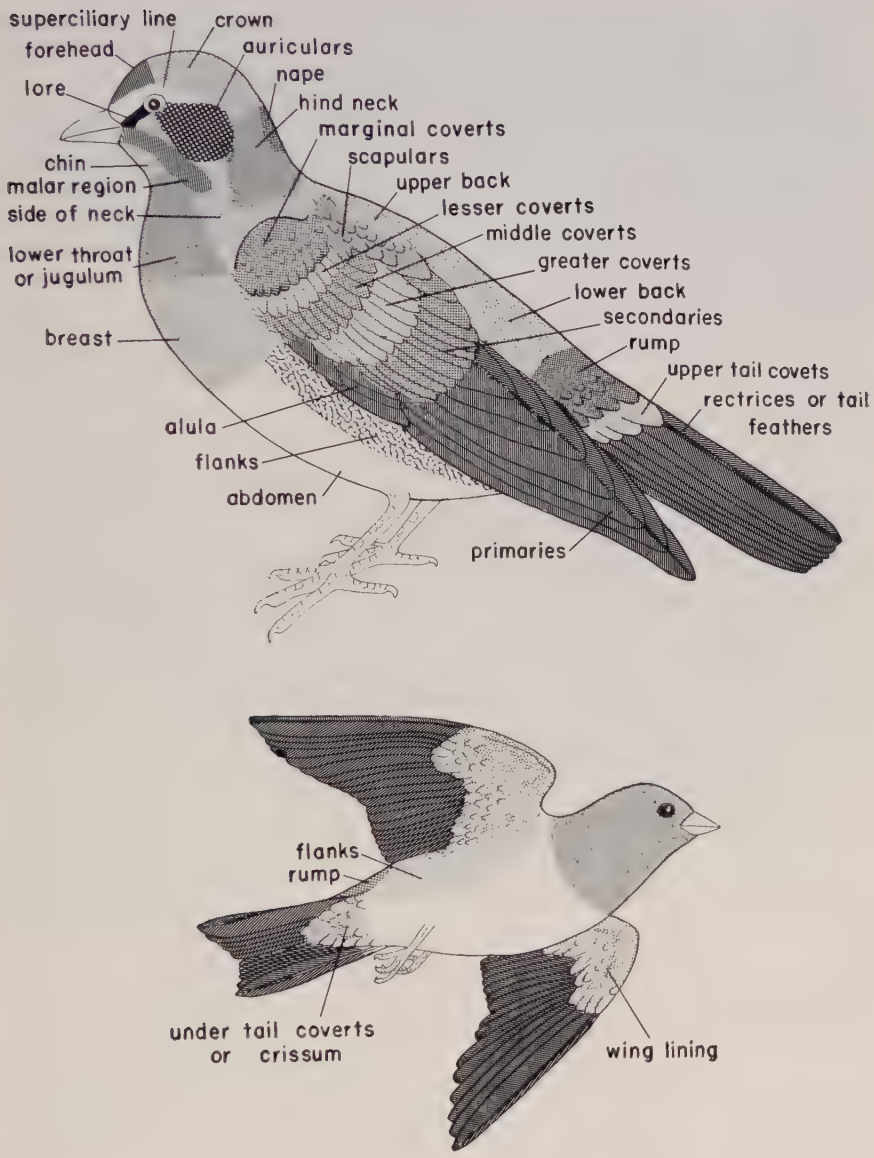


FIG. 6. External features of a bird.

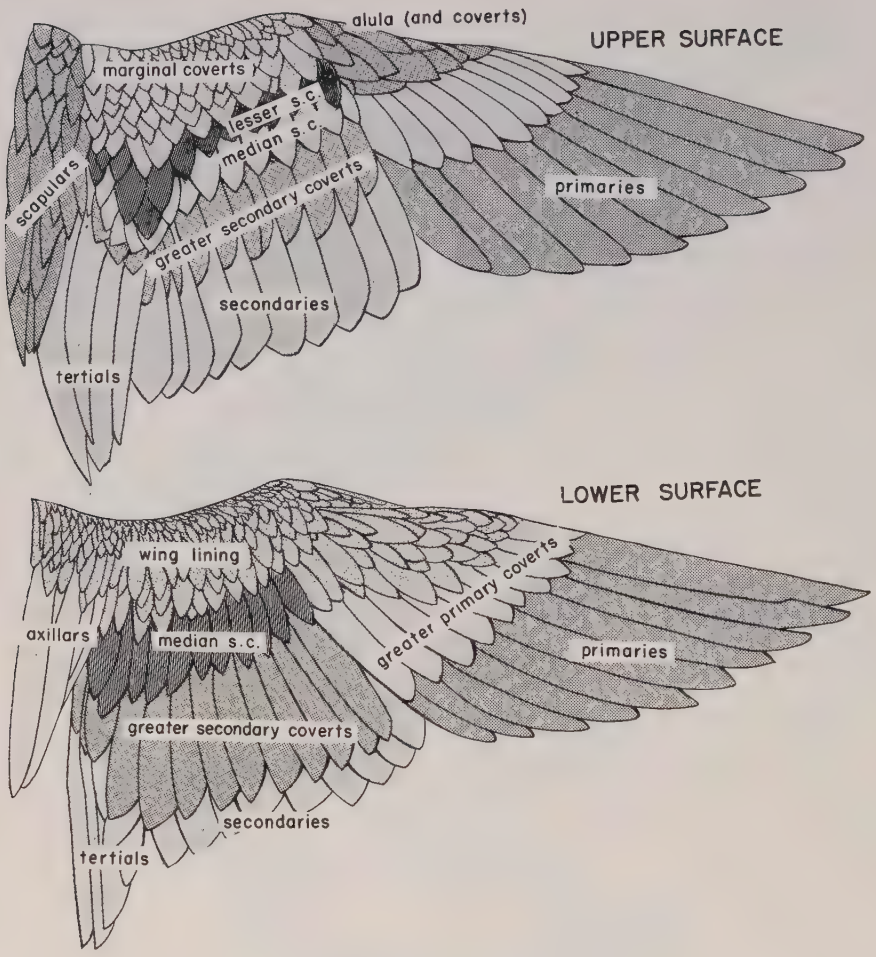


FIG. 7. The classification of the feathers of the wing.

are likely to respond. I have never understood why "squeaking" should not be most effective in the breeding season, but at that time the reaction is mainly confined to birds whose nests are very close by. At any rate, the strategem always helps an observer obtain good views of many birds with retiring habits. The sound should be continued as long as any birds show interest; quite often the more wary species appear only after much inducement. A com-

bination of squeaking and an imitation of the Screech Owl's call is more effective than squeaking alone, particularly with small woodland birds. The owl note is made by holding the head back and whistling through saliva held on the back of the tongue. If a Screech Owl is in the vicinity, it may answer the imitation of its call.

In order to make efficient use of the descriptive material in this and other bird books, the beginning student in ornithology needs to become familiar with the so-called topography of a bird. The various external components of the head, neck, trunk, wing, tail, bill, and foot all have special names that are used over and over again in descriptive ornithology. These names apply to precise features, definite areas, or certain particular feathers; consequently, they help immeasurably in accurately describing a bird in the fewest possible words. For example, it is better to be able to simply say "lores" instead of each time this part is mentioned having to say "the area between the anterior corner of the eye and a point just behind the nostril at the base of the bill." Figures 6 and 7 are designed to map and identify the principal external features referred to in ornithological works.

As one's knowledge of birds in the field increases, there is invariably a desire to read what is known about their habits, their distribution and migrations, and the various other aspects of their daily lives. Most libraries contain works that supply much of this information. Fortunately, Louisiana has had two books published on its bird life, both issued by what is now known as the Wild Life and Fisheries Commission. Stanley Clisby Arthur's *Birds of Louisiana* appeared in 1931 and was followed in 1938 by Harry C. Oberholser's *Bird Life of Louisiana.* The student who can gain access to either of these publications will find much useful and interesting information concerning our state's avifauna. Unfortunately, both books are now out of print, but Oberholser's work was widely distributed in the state and thus can usually be located for reference purposes.

Feathers, Plumage, and Molt

THE ONE UNIQUE external characteristic of birds is that they possess feathers. All their other features are distinctive only in combinations of two or more characters. For example, we cannot say that birds are the only animals with nucleated red blood cells, but we can say that they are the only *warm-blooded* animals with nucleated red blood cells. Since feathers are peculiar to birds and are so marvelous in their structure and function, they should be thoroughly understood by the student of birds.

It would appear that birds are covered by feathers, and in a literal sense they *are* covered; but by this we do not mean that feathers grow from all surface areas of the body. They are instead located in definite tracts, which are technically called *pterylae*, as opposed to the bare areas, called *apteria*. There are exceptions, such as in the case of penguins and ostriches and their allies, in which the body feathering is quite complete. The generalized distribution of the eight principal tracts is shown in Figure 8, but there are many minor deviations from this scheme that provide the basis for the important study known as pterylography. The pterylae in related groups of birds show certain peculiarities in shape and in relative size that distinguish them from the pterylae of other groups and, therefore, are useful in determining relationships.

Feathers can be classified into five major types: contour, down, semiplume, filoplume, and powder down. The first of these are the feathers that we see, which include, in addition to the body covering, the wing and tail feathers. A typical contour feather (fig. 9) is one such as we might pluck from the

breast of a crow. Close examination reveals that it consists primarily of the *quill*, or *shaft*, and the *vane*. The former is divisible into two clear-cut parts, the bare *calamus*, by which the feather is anchored to the skin, and the *rhachis*, which bears a series of flat, platelike structures collectively called the web or

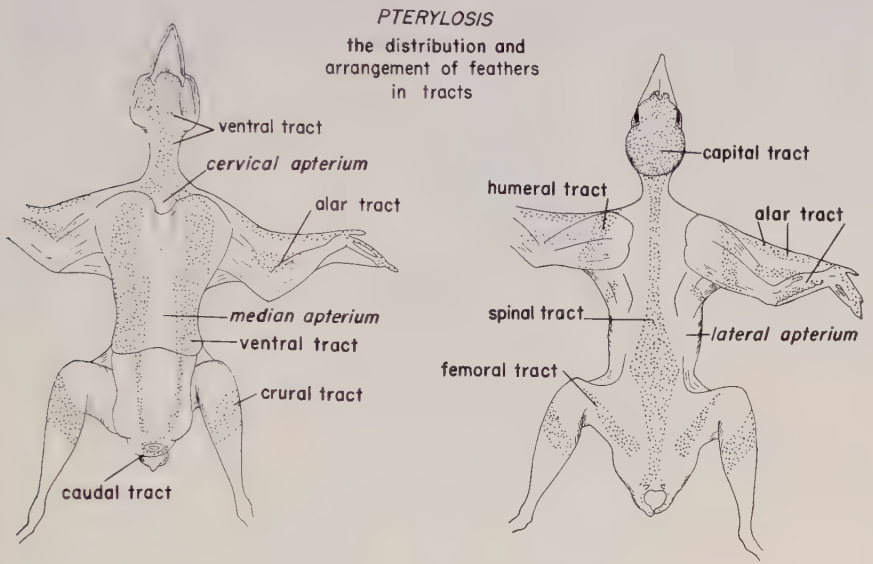


FIGURE 8.

vane. The base of the calamus is seen to have a small opening, the *inferior umbilicus*, through which nutrient materials enter the shaft in the period of the feather's growth and development. At the point where the rhachis and the webbing begin, there is visible on the under side of most contour feathers a slight depression, the *superior umbilicus*, from which a tuft of downy filaments protrudes. This tuft is called the *aftershaft* or *hyporhachis*. In the feathers of many birds the aftershaft is poorly developed; but in others it is conspicuous—for example, in the Emu and the Cassowary, in which it is as long or nearly as long as the main shaft (fig. 10). This "double feather" condition is believed to represent the type of feather possessed by many ancient birds. Its retention in some modern forms, such as in the grouse where the aftershaft is about as long as the main shaft (fig. 10), perhaps serves a useful purpose by providing a heavier insulation against the cold; feathers in general are a means whereby birds preserve their body warmth and exclude

the cold. Feathers create a "dead air space," comparable to that in a thermos bottle; hence the colder the temperature, the more the feathers are fluffed in order to increase the depth of this insulating space.

Among the most remarkable features of a feather are the microscopic devices that interlock the plates comprising the web. They are particularly essential in maintaining the rigidity of the flight feathers, which are subjected to great stresses as the bird beats its wings. If a single element of the web,

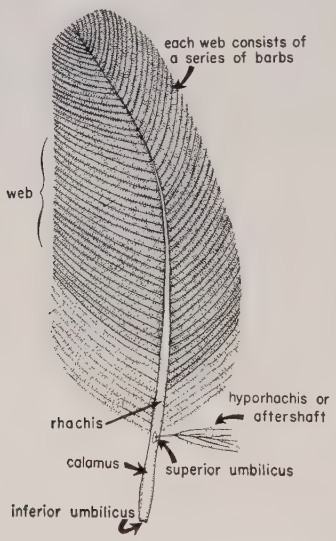


FIG. 9. A typical contour feather and its major components.

called a *barb*, is pulled free from adjacent barbs and examined under a magnifying lens, it will be found to resemble a minute feather in that it consists of a shaft with webbing on each side. The subsidiary "barbs" making up the "web" on the true barb are called *barbules*. Those on the side toward the tip of the feather interlock with the barbules on the back side of the succeeding barb. Certain hooklike processes, *hamuli*, on the under side of one barbule fit into flanges on the top side of the adjacent barb, thereby holding the entire web together (fig. 11).

Contour feathers show many variations, of which color is the most notable. The almost infinite number of shades and tints displayed by the world's 8,000-odd species of birds is unsurpassed in any other group of animals, and only

butterflies and flowering plants may be regarded as serious rivals. Modifications in the structure of contour feathers sometimes involve an omission of the interlocking devices on the barbules, and this makes the feather filamentous or lacy. Such is the condition, for instance, in certain back feathers of the Snowy and American Egrets, feathers that form the main *aigrettes* that these magnificent birds erect in their courtship. It is the modification of the normally small feathers covering the base of the tail, called the *upper tail coverts*, that

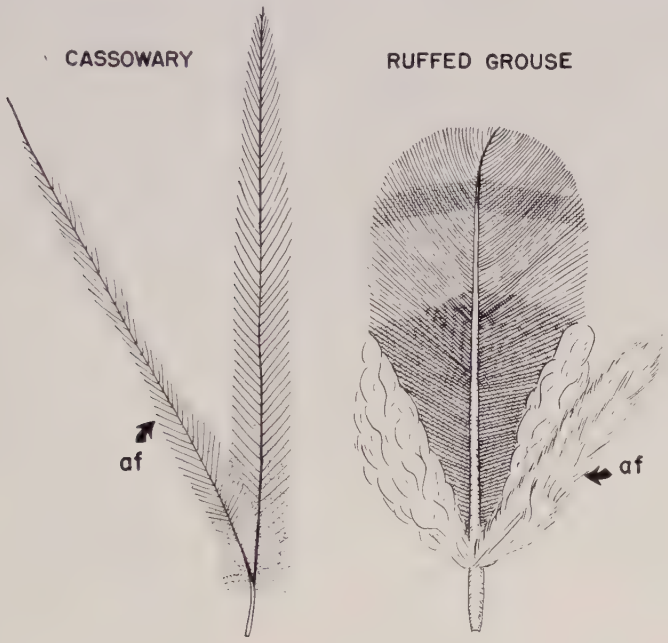


Fig. 10. Contour feathers of the Cassowary and Ruffed Grouse, showing variations in the length of the aftershaft (af) or hyporhachis.

supplies the well-known ornament of the Peacock. An alteration of the tail feathers themselves creates the almost unbelievable adornment of the Lyre-bird and some of the renowned vestures of the Birds of Paradise. Less spectacular are the variations in contour feathers that create crests, topknots, ruffs, ear tufts, forked or pointed tails, gorgets and other outstanding features.

At the time of hatching many birds are covered, at least in part, with *down* (fig. 12a). These short, usually dense, feathers possess a calamus but

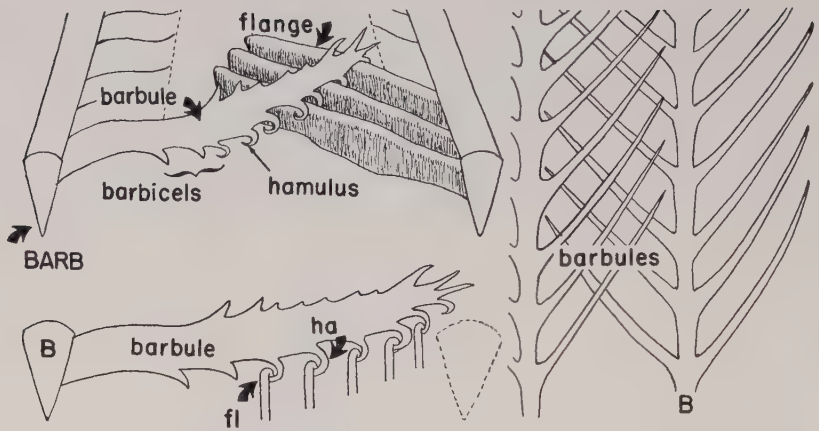


FIG. 11. Diagrammatic drawings of the microscopic structural details of a typical contour feather. Note the devices (hamuli and flanges) that interlock the obliquely overlapping barbules.

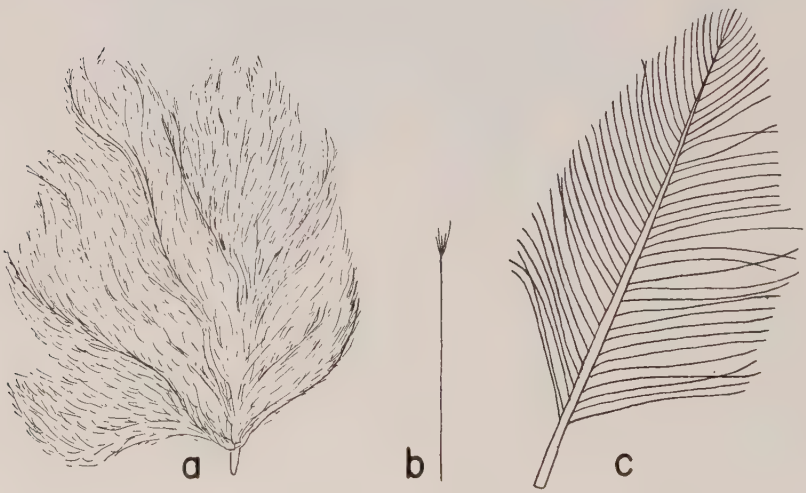


FIG. 12. Typical down feather (a), filoplume (b), and semiplume (c).

ordinarily no rhachis. The barbs arise from the top of the calamus in a tuft, or from a soft rhachis, and, since they lack barbules and interlocking devices, they are fluffy. Down feathers are characteristic of ducks and the majority of water birds, even as adults. They occur in the natal stage of most other birds, although the higher types possess only a scant amount of them and some birds, such as woodpeckers and hummingbirds, lack them altogether. In any event, whether down is sparse or dense, there is an evolutionary tendency for birds to pass through the down stage as rapidly as possible. It is said that the Brush Turkey of Australia goes through the stage in the egg!

The *semiplumes* (fig. 12c) are structurally somewhat intermediate between down and contour feathers. Unlike down, they have the entire shaft present and of firm texture, with the web on each side; but, like down, there are no hooks and flanges for holding the web together. Semiplumes are found chiefly on the under parts of the bird and are always covered by the main contour feathers.

The *filoplumes* (fig. 12b) need no introduction other than to point out that they are the irksome hairlike structures that cause the discriminating cook inconvenience (along with "pin feathers," or feathers not yet mature and hence soft and mushy at their base). About the only way to remove the filoplumes is by singeing. Superficially they seem like hairs because of the exceedingly long, thin shaft, in which there is no marked separation into calamus and rhachis; on the end there is usually a tiny tuft of barbs.

The final category into which feathers are divided is *powder down*. These feathers arise as peculiar mats on the flanks, abdomen, or breast of all members of the heron tribe and even hawks and parrots. They are believed to be continuously-growing down feathers, the tips of which are perpetually breaking down into a powdery substance. The feathers of herons in particular are quite powdery to the touch. Powder-down feathers are exceedingly oily at their base and perhaps serve to supply the birds that have them with supplementary lubrication and furbishment for their plumage.

A bird's feathers are directly subjected to the adversities of the environment and consequently become gradually worn and abraded. Fortunately, nature has taken care of the situation to the extent that virtually no bird is required to retain one set of feathers for more than one year. This annual shedding of the feathers is called *ecdysis*, or *molt*, and when it happens but once a year, the event always follows the breeding season and hence is called *postnuptial* molt. This molt is complete; that is, every feather is shed and a new one is acquired in its place. In addition to the postnuptial molt, many

FIGURE 13. (*part*)

Reproduced with modifications from O. S. Pettingill

FIGURE 13. (*concluded*)

birds undergo a *prenuptial* molt just before the breeding season. This molt is often partial, involving principally the feathers of the head. Birds with spectacular breeding plumage in contrast to a drab winter dress naturally must pass through a prenuptial molt.

Ecdysis takes place over a period of several weeks and usually by one or two tracts at a time; hence there is no period when the bird is nude of its covering. This is particularly important in the case of the wing and tail feathers, which are essential to the bird in maintaining its mobility. When we see a vulture soaring overhead with the fourth primary missing on the left wing, almost invariably the complementary primary on the right wing is also missing. A classic exception to this manner of molting the flight feathers is provided by most ducks, which shed these feathers almost simultaneously and therefore become temporarily flightless during the period of the *eclipse plumage*. The characteristics of the *eclipse* molt in these birds are of special interest and will be mentioned in another connection.

The various plumage stages are clearly defined and fairly uniform in their sequence in all birds. Since many species assume radically different appearance in successive molts, it is essential that the student of birds familiarize himself with the names of the plumages, the molts by which they are lost, and the generalized scheme of their sequence. The plumages are definable as follows:

Natal Down.—This plumage consists of down feathers, which are present on hatching or else acquired soon thereafter. As previously noted, it is a plumage stage that is passed through rapidly and in some birds, such as woodpeckers and hummingbirds, skipped altogether. In ducks and gallinaceous birds (for examples, turkeys and chickens) the down covers the entire body, whereas in perching birds, such as sparrows, the down is limited mainly to the tracts on the upper parts. The plumage is lost by the postnatal molt, which is always complete.

Juvenal Plumage.—Usually within a few days of hatching the young bird shows some evidence of acquiring the first set of contour feathers, which make up the juvenal plumage. In nearly all songbirds, the body covering is complete before the birds leave the nest, and the wing and tail feathers full length or almost so, within another week. The whole process from hatching to flying seldom requires much more than three or four weeks. At this point I should emphasize that in the majority of birds, the young, when they leave the nest, are just about as large as they will ever be. To be sure,

there are numerous exceptions, as, for instance, the highly precocial young of ducks and grebes, which hit the water and swim with agility within an hour or so of hatching. Also, baby plovers run from the nest, a mere depression in the sand, as soon as the feathers are dry. On the other hand, young eaglets remain in the nest for three to four months, and when they finally leave they may even be heavier than their parents because of their rapid growth and lack of exercise. The juvenal plumage is often partially replaced or supplemented soon after departure from the nest, but sometimes the plumage remains intact until late summer or fall. The process by which the juvenal plumage is lost is called the postjuvenal molt, which may or may not be complete.

First Winter Plumage.—This is the plumage that the young bird wears from late fall until the following spring. In some birds, such as chickadees, this plumage represents the pattern and coloration to be worn for life, but in other birds marked transformations occur before the first breeding season. In birds where the sexes are dissimilar both the juvenal and the first winter plumages of males often resemble the hen more than they do the fully adult male. This is possibly always true where the adult markings are actually secondary sexual characters induced by sex hormones. The brilliant livery of the male Painted Bunting is brought on by secretions of the mature male gonads, which do not become activated until the spring following birth. Before this the male is attired like the female. Experimentally, in the laboratory, adult males can be made to assume the color of the female by the injection of female harmones. Conversely, the female can be made to take on the male attire by the injection of male hormones. On the other hand, the black throat and other male characters of the House Sparrow are unaffected by injections of even great quantities of female hormones, and, interestingly enough, the male characters are assumed in the postjuvenal molt, many months before the bird's initial sexual activity. In some birds the first winter plumage is retained as the first nuptial plumage, but in most cases it is at least partially replaced by the prenuptial molt. There are instances where a prenuptial molt occurs prior to the first nesting season but not thereafter.

First Nuptial Plumage.—This is the first breeding plumage and, in many birds, it is less brilliant that the breeding dress acquired in subsequent years. In the Orchard Oriole, for example, the color and pattern of the male still closely resemble that of the female, the main difference being that a black throat is acquired by the first prenuptial molt. In other species, such as the Indigo Bunting and various warblers, the plumage of the male in the first

breeding dress simply lacks the richness of color characteristic of older individuals. The plumage is always lost at the end of the nesting season, by the first postnuptial molt, which is complete.

Second Winter Plumage.—This term is applied to the plumage worn during the second winter, especially when it differs from the plumage worn the first winter. It is not usually distinguishable from the winter plumages that follow in successive years. It is lost by the second prenuptial molt, either wholly or in part, or it may be retained as the adult nuptial plumage. Birds with a breeding plumage distinct from the winter plumage naturally undergo at least a partial prenuptial molt.

Second Nuptial Plumage.—This term has particular utility only when the second breeding plumage differs from the first. When the second breeding plumage or those of subsequent years do not differ, they are referred to simply as the *adult nuptial plumage.* The nuptial plumage is worn only during the breeding season and is lost by a complete postnuptial molt when nesting is over.

Third and Fourth Winter Plumages.—These names are usually employed only in the case of the comparatively few birds (for example, the Bald Eagle and certain gulls) that have distinctive plumage characteristics in their third and fourth years. Otherwise the plumages are termed simply *adult winter.*

The following chart summarizes all the plumages and the molts by which each is lost. It should be memorized by the student, for there will be numerous occasions when the information will be needed. The plumages and the sequence of molt as it occurs in six selected species are shown in Figure 13.

Name of plumage	*Molt by which plumage is lost*
natal down	postnatal
juvenal	postjuvenal
first winter	first prenuptial
first nuptial	first postnuptial
second winter	second prenuptial
second nuptial	second postnuptial
third winter	third prenuptial
third nuptial	third postnuptial

Explanation of Photograph on Opposite Page

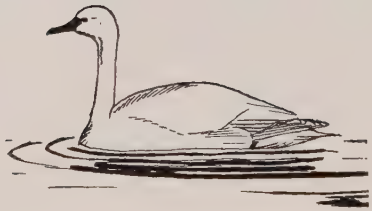
SCREECH OWLS AT THEIR NEST SAMUEL A. GRIMES

Eclipse Plumage.—A unique plumage sequence is observable in most male ducks. As soon as the female begins to incubate, the male rapidly loses all of the wing and tail feathers, and its body feathers are partially replaced by a plumage that resembles that of the hen. For the next five to eight weeks the male is flightless, but then he undergoes another molt whereby he regains his full regalia and is ready to migrate southward. The so-called *eclipse plumage* is equivalent to the winter plumage, and the molt by which it is acquired is actually the postnuptial molt of other birds; it is lost by a prenuptial molt that is moved forward some six months. In Figure 13 the so-called "second winter plumage" of the Mallard is actually the eclipse plumage. The "second nuptial plumage" is acquired by the eclipse molt and is worn through the winter and into the subsequent breeding season. Adult northern ducks that come down to Louisiana in late fall and early winter are consequently in their finest attire—in what amounts to their nuptial plumage.

Plumage changes occur by other means than molt. In a few birds this is accomplished by wear. The Starling, for example, is profusely speckled in late fall and early winter following the postnuptial molt. By the time spring comes it is a highly iridescent black. This transformation is effected by the wearing off of the light tips to the black feathers, as shown by the drawings of the Starling in Figure 118. The colors of other birds change through fading, as well as by abrasion. This is not notably true of species in which there is no prenuptial molt and in which habitat preferences are open, sunny situations or for coarse vegetation. The feathers of the little Carolina Wren, for instance, must last from one September to the next September. In this time the bird's attire becomes so badly faded and worn that it scarcely resembles the original richly-colored, mahogany-brown and buff plumage of early fall.

Color variations within a species are sometimes due to *dichromatism*, or the presence of two or more color phases. Some well-known examples are the red and gray phases in the Screech Owl (see previous page), the whitish and yellowish phases in the Barn Owl, and the light and dark phases of the many kinds of hawks (Plates XII and XIII). Some types of dichromatism are quite common within certain species, but others are rare. Abnormal blackness results from a phenomenon known as *melanism*, the preponderance of certain melanins, or dark brown or blackish-brown pigments, in feathers. The complete absence of pigment produces *albinism*. Albino individuals are also pink-eyed, since pigment is lacking from the iris of the eye, allowing light to be reflected from

the underlying blood vessels in the vascularized portions of the retina. Technically there is no such thing as a "partial albino," for birds that are blotched with white may be so colored because of injury or because of a special genetic influence called the "spotting factor." All-white birds with black eyes are called "black-eyed whites" by the geneticist, who recognizes this variation as something entirely apart from pink-eyed whites, or true albinos. Two rarer variations are *erythrism* and *xanthochroism*, caused by excessive amounts of reddish-brown and yellow pigments, respectively, deposited in the feathers.



The Bird Skeleton

THE SERIOUS PURSUIT of ornithology, even as a hobby, should be implemented at the outset by at least a cursory study of the skeletal anatomy. This will serve to enhance the student's appreciation of the adaptations of the bird as a flying mechanism. The bird is, indeed, a bundle of marvelous evolutionary modifications, representing nature's greatest success in producing a large animal capable of sustaining itself aloft by its own power. By means of flight, birds escape enemies, secure food, and find mates. On outstretched pinions, they span the widest oceans and soar over the highest mountains. Thus they have been able to occupy all the continents of the world.

Flight in birds is accomplished primarily as a result of changes in the fore limb that have converted this structure from the conventional type of vertebrate organ of locomotion into a wing. In general, the primaries provide the propellers and the secondaries furnish the surface that creates the "lift" (fig. 14). Together they make flight possible. The main functions of the bones are to furnish a firm anchorage for these feathers and to serve as a place of attachment for the muscles that move the limb. A consolidation of and reduction in number of the elements in the limb (fig. 15) would naturally increase its efficiency of operation by providing greater leverage and more rapid up-and-down motion. It is not surprising, therefore, to discover that this is precisely what happened when birds evolved from reptiles and the reptilian arm became a wing. The elements of the forearm (*radius* and *ulna*) and upper arm (*humerus*) remained essentially unchanged though the shoulder joint acquired a greater freedom of rotation.

The most drastic alteration was the reduction of wrist bones (*carpals*) from the usual complement of seven to two, the *radiale* (articulating with the *radius*) and the *ulnare* (articulating with the *ulna*). This diminution in the number of wrist bones achieved greater simplicity and permitted the end of the limb to sweep more freely through its propellerlike motions, from which the bird gains propulsion. The hand (*manus*) has likewise undergone radical

reduction in the number of elements. Five *metacarpals* were reduced to three. There is disagreement among authorities as to which two of the original five metacarpals are missing. Some comparative anatomists think the first, second, and third metacarpals are retained, that the fourth is missing, and that the fifth has become the so-called ulnare. Other anatomists believe simply that the first and fifth metacarpals are lost, with the second, third and fourth remaining.

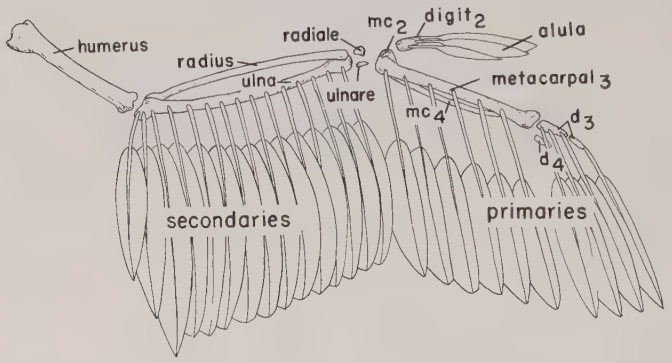


FIG. 14. The bones of the wing and their relationships to the alula, primaries, and secondaries.

Until more conclusive embryological studies have been made, I prefer to follow the latter interpretation. The "second metacarpal" is only knoblike and is fused to metacarpal number three, which is the largest, as well as the one to which the primaries attach. Metacarpal number four is a distinct bone, but it is fused at each end to metacarpal number three. Each of the three metacarpals continues to bear a digit, but the number of *phalanges* or joints in each is greatly diminished. Our own phalangeal formula is 2-3-3-3-3, whereas that of the bird is ordinarily 0-2-2-1-0.

By comparing the bones of the fore limb of a bat, horse, or man with those of a bird, we quickly see the extent of reduction that has occurred in the latter. Man has the humerus, the radius and ulna, seven carpals, five metacarpals, and five digits, the last comprising fourteen phalanges—or a total of twenty-nine elements. The typical bird has a total of only thirteen bones in its fore limb. A diagrammatic comparison between the fore limbs of the bird, bat, horse, and man is shown in Figure 15.

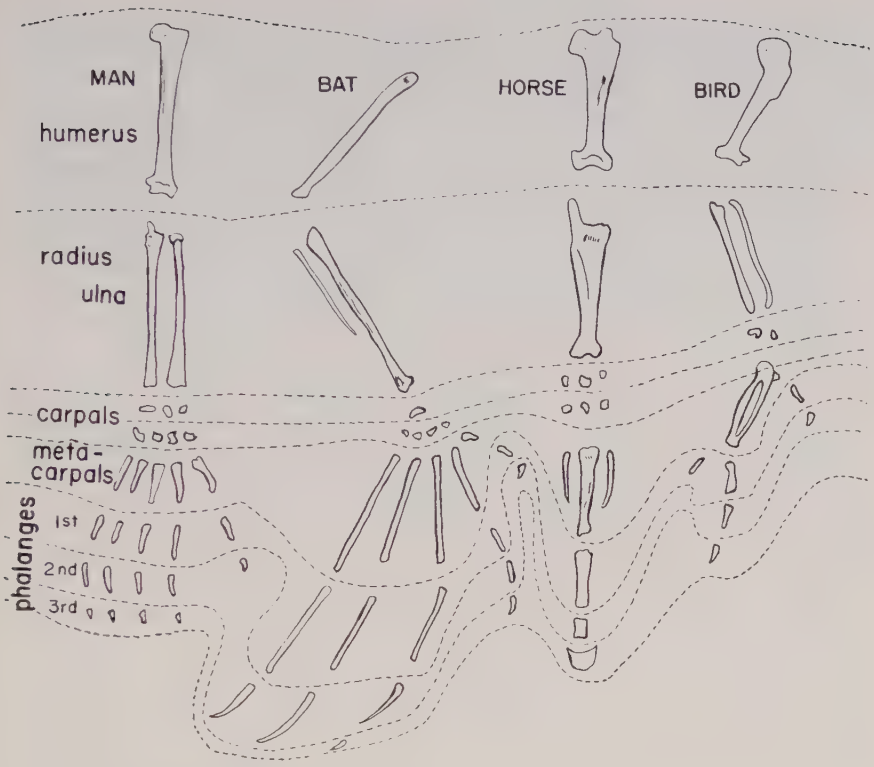


FIG. 15. Diagram showing the homologies in the bones of the forelimb of a man, a bat, a horse, and a bird. (After Coues.)

There are many other skeletal modifications, aside from those that have taken place in the fore limb, that are superb adaptations for flight (fig. 16). The fore limb requires firm anchorage, and we find it perched in a socket on a sort of tripod formed by the *scapula*, the *coracoid*, and one arm of the *furcula*, or wish bone, which is nothing more than the two fused "collar bones." The muscles that operate the wing secure their main attachment across the broad breast bone and on its upright keel. Compactness and rigidity in the whole skeletal setup is provided by the extensive fusion of parts. This is particularly evident in the coalition of the pelvic bones with the vertebral column and from the special "struts," or braces, called uncinate processes, that connect one rib

with the next. The hollow wing and leg bones reduce weight without loss of strength, and the lightness of the thin-boned skull helps to shift the bird's weight and center of gravity backward.

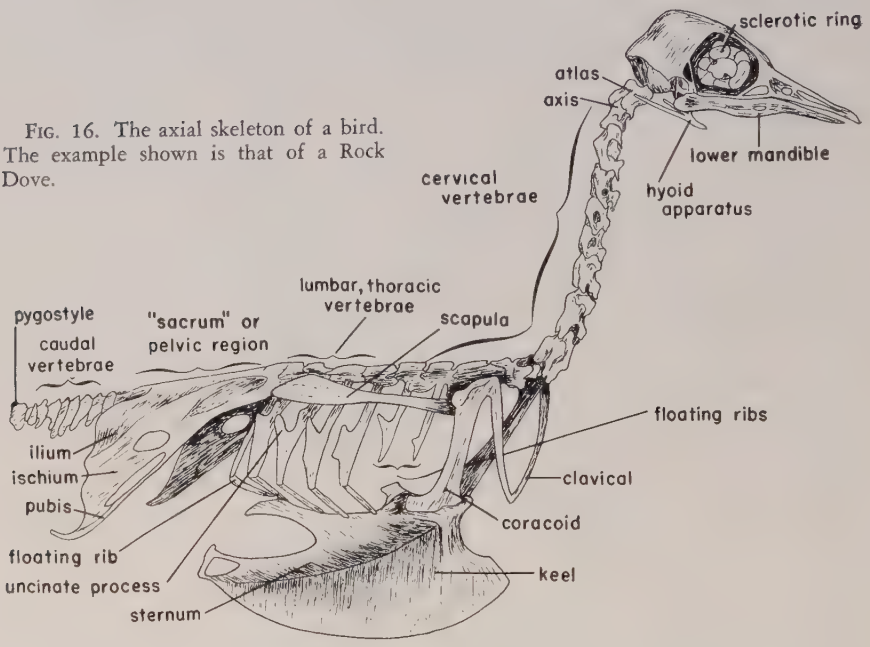


FIG. 16. The axial skeleton of a bird. The example shown is that of a Rock Dove.

Few changes are more important than those manifest in the tail, where most of the vertebrae have been lost or else have moved forward to fuse into a single structure, the *pygostyle* (along with other caudal vertebrae forming the skeletal support to what is commonly called the "Pope's nose"). The pygostyle serves as an anchorage for the tail feathers. *Archaeopteryx*, the lizard-tailed bird that lived in Bavaria some 155 million years ago, retained a long series of tail vertebrae with feathers along each side (fig. 17), but this must have been very unwieldy. Many modern birds can use their tails as effective rudders and elevators simply by moving the pygostyle, which in turn alters the position of the tail feathers.

The bird achieves buoyancy in the air and on the water not only by the lightness of its skeletal parts but also by its elaborate system of air sacs, which

FIG. 17. Impression in slate of the remains of the Lizard-tailed Bird (*Archaeopteryx lithographica*) found in Bavaria. (Photograph courtesy British Museum of Natural History, London.)

connect with the bronchial tubes and with the hollow spaces in the humeri and certain other bones. These sacs likewise increase the breathing efficiency of the bird by providing air spaces without using up vascularized portions of the lungs, which are the only places where an interchange of gases can take place with the red blood cells. In our own lungs a considerable part of the vascularized area is not used with full efficiency, since the air in the lower recesses of our respiratory organs is not always expelled at each exhalation. Because, as already noted, the air sacs connect with the hollow wing bones, we can readily understand why it is virtually impossible to suffocate a bird with a broken humerus simply by closing its mouth and plugging its nostrils. It breathes through the broken bone.

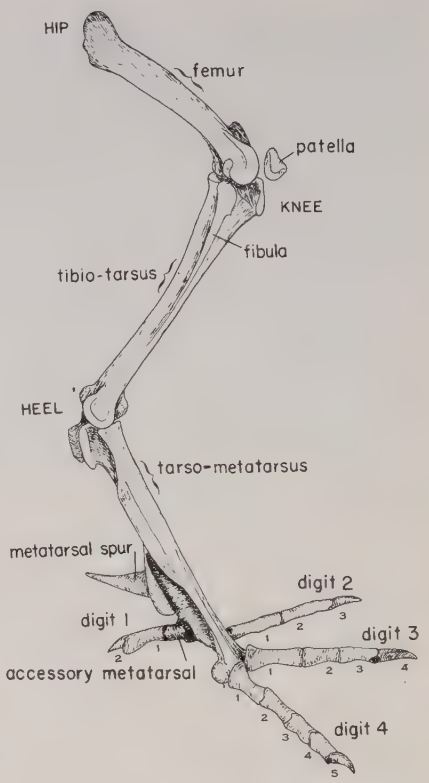


FIG. 18. The bones of the hind limb of a bird. The example used is that of a chicken.

The hind limb, like its counterpart, the fore limb, has undergone great alterations leading to a diminution of some elements and the fusion of others. Adaptive changes within certain groups of birds have converted the leg and foot into a paddle; in others, to a more efficient means of running. Above all, these changes have produced a structure that is eminently effective for grasping the limbs of trees, a modification that permitted the vast majority of birds to become arboreal, either wholly or in part.

There is a popular misconception concerning the identity of the bones of the hind limb (see figure 18). The knee of a bird bends forward as it should, but we generally do not see this part of a bird's leg. The thighbone, or *femur*, fits into a socket located far to the bird's rear, and since the bone is

usually short, it and the knee are generally concealed by the feathers, or may actually fail to reach the outside at all. The next section of the leg is the *crus*, or "drumstick," consisting of two bones—the larger, the *tibia*; the smaller, the *fibula*. With rare exceptions, as in some penguins, the fibula is merely a sliver of a bone. Technically this section of the leg is called the *tibio-tarsus*, since it incorporates at its distal, or outward, end some fused tarsal elements. The junction of the tibio-tarsus with the *tarso-metatarsus* is the joint which is mistaken for the real knee. Actually it is the bird's heel. The succeeding section represents a consolidation of the remaining tarsal elements and the surviving metatarsal bones and is called the tarso-metatarsus, or often simply the "tarsus." There are no free tarsal bones remaining in the foot of the bird. The bird has become entirely *digitigrade*, that is, it stands on its toes, in contrast to man and several other animals that are *plantigrade* and stand on

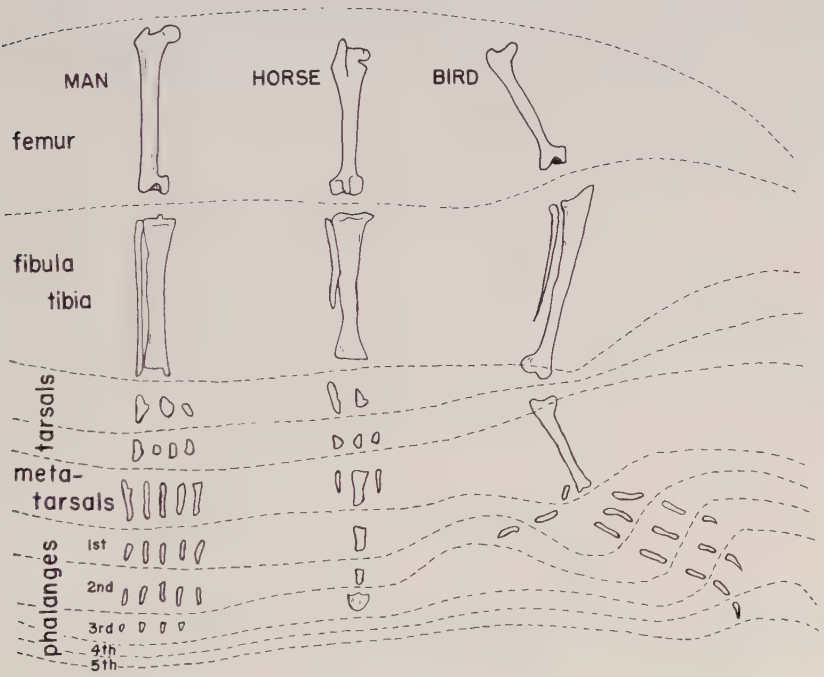


FIG. 19. Diagram showing the homologies in the bones of the leg of a man, a horse, and a bird. (After Coues.)

the entire foot. The bird's foot contains three or four digits, each with its complement of phalanges, or joints, the outermost ones always bearing a claw.

The student of birds should carefully study Figure 18 in order that he may know the proper names of the elements involved and, surely, under no circumstances, confuse the heel with the knee. Examination of Figure 19 will disclose the true homologies of the bones of the bird's leg with those in man and the horse.

Some birds possess accessory structures on the wings and legs. The toes of reptiles possess *claws*; hence it is not surprising that some birds also have small claws on the digits of their fore limbs as well as on their toes. Such rudimentary claws are to be found on the second finger of certain vultures and geese, as well as on some of the digits of other birds. In the South American bird, the Hoatzin, functional claws are found on the first and second fingers of the young, which use all four limbs to advantage in climbing and scrambling about on branches. Claws are, however, not to be confused with the *metacarpal spurs* on the wings of such birds as the Jacana (fig. 20). These horny protuberances are comparable to the metatarsal spurs found on the tarso-metatarsus of gallinaceous birds, such as the domestic fowl and the turkey. The latter appear only on the male, serving as offensive weapons, and are classified as secondary sexual characters, since they develop under the influence of male sex hormones.

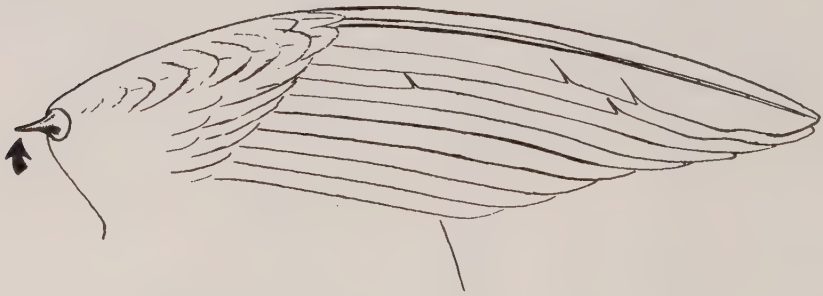


FIG. 20. The metacarpal spur (indicated by arrow) on the wing of a Jacana.

For a more complete discussion of avian anatomy, the reader is referred to the classic account in Volume 1 of Elliott Coues' *Key to North American Birds* (6th ed., 1927). If this work is not available, I recommend a perusal of *A Laboratory and Field Manual of Ornithology* (rev. ed., 1946) by O. S. Pettingill.

Migration

TWICE EACH YEAR birds perform one of nature's most remarkable feats. Millions of them depart from their northern breeding grounds as soon as the nesting chores are completed and fly hundreds, sometimes thousands, of miles to regions of warmer climate. After a sojourn in southern lands, sometimes even in faraway South America, the birds respond to some stimulus that sends them surging northward again. These incredible journeys are made not only by large, strong-winged birds of renowned prowess of flight but also by such small birds as swallows, wrens, warblers, tanagers, sparrows, and even the diminutive hummingbirds. The passage of small land birds is the more remarkable because it is accomplished in large part at night and because it carries many of them on long and perilous treks over great expanses of open water.

The identity of the stimulus that sets migration in motion has yet to be established with complete certainty, but day length is unquestionably of great importance. The internal physiological changes that occur prior to actual migration include an increase in the size of the sex organs and the deposition of excess amounts of fat, to be used later as a source of much-needed energy. But the exact nature of the psychological trigger that initiates the process of migration, even causing a bird to launch out into the night sky, is still a mystery; so is the nature of the orienting mechanism that sends the bird unerringly in the direction of its summer home. When we stand on a Gulf beach in spring and watch birds making a landfall after a trans-Gulf passage or even as we listen from our lawns on a cloudy night to the frequent flight calls coming down out of the darkness, is it any wonder that we marvel at what is taking place?

This semiannual event lends a real flavor to the study of birds. It accounts for the interesting seasonal variations and for the general diversity of our bird

life on a local basis. If migrations ceased and all species remained the year around on their present nesting grounds, our state's avifauna would be reduced by approximately sixty-two per cent. We could no longer, for instance, look forward in fall to the arrival of the hordes of ducks and geese, or the great array of sandpipers, plovers, swallows, and warblers, or the huge flocks of winter sparrows. The study of birds would be narrowed tremendously, and we would be denied one of our major enjoyments—the anticipation always of something new, such as a transient off its normal migratory route or a straggler from the distant North seeking to escape the cold.

Space does not here permit a discussion of the many interesting facets of the study of migration. Whole books have been written on the subject without doing full justice to it. Features of migration such as the punctuality with which many species arrive in certain localities year after year, the routes followed, the distances covered, the rate or speed of performance, and the possible explanations of the origin of the phenomenon itself are among the topics admirably covered in such works as Frederick C. Lincoln's *Migration of American Birds* (1939) or Glover M. Allen's *Birds and their Attributes* (1925). Further remarks in this work will be confined to local aspects of the subject, to the visible manifestations of migration as they may be witnessed by the bird student resident in Louisiana.

Since we are situated at the lower end of the great Mississippi Valley, a considerable portion of all southward migration in North America is funneled in our direction. Not only do we receive birds from the upper portions of the valley itself, but continental air currents apparently have a marked tendency to shift migrants from the Great Plains region in a southeasterly direction, often as far east as Louisiana. The general southward tapering of the continental land mass and the southwesterly slant of the Allegheny Mountain chain likewise appear to channel migrants from the eastern United States toward the central-northern Gulf Coast. These effects combine to make autumnal migration in Louisiana a steady daily procession of birds of many types.

The arrival of southbound birds in the state begins surprisingly early—in mid-July in the case of many shore birds, certain swallows, and a few warblers. The first ten days of August find the tide of migration visible in force, but the peak is not reached until September. From late August until the middle of October our woods teem with transients. On some nights the sky seems to be filled with birds, judging by the call notes audible to the listener on the ground or by the number of birds actually seen passing before the

moon (see page 38). On the night of October 2-3, 1952, for example, over a thousand silhouettes of birds were counted through a single telescope at Baton Rouge. When one considers the small size of the space through which a bird must pass to be visible against the background provided by the moon, it is apparent that hundreds of thousands of birds must have passed over Baton Rouge on this night.

The spring concentrations of migrants in the state as seen in the daytime are more spectacular than those of autumn because the pageant is of shorter duration and the visible evidences of migration often come in bursts or waves that are associated with inclement weather. The Purple Martin sometimes returns to the state on the amazingly early date of January 24 and is regularly here in numbers by the middle of February. Its appearance is far in advance of that of other birds. The first wave of migrants generally reaches southern Louisiana in the first week of March, bringing in the Parula, Black-and-White, and Yellow-throated Warblers, and the Yellow-throated Vireo. Within two weeks these birds are joined by scores of Ruby-throated Hummingbirds, White-eyed Vireos, and Hooded Warblers. By the last week of the month the state is covered with summer resident birds, those scheduled to breed in our woods and swamps and about our homes and gardens. Included among these are the Chimney Swift, Great Crested Flycatcher, Wood Thrush, Red-eyed Vireo, the Prothonotary, Worm-eating, and Kentucky Warblers, the American Redstart, Orchard Oriole, and Summer Tanager. Other common summer birds, such as the Blue Grosbeak, Painted and Indigo Buntings, Dickcissel, and Swainson Warbler, normally do not appear in maximum numbers until after the middle of April, but, in any event, the vast majority of our breeding birds are on their nesting grounds and actually engaged in the selection and defense of territories, the choosing of mates, and even the building of nests when the transient migrants arrive in force.

The transient migrants comprise the host of species that winter to the the south of us and breed to the north, merely passing through our state. Proceeding with them are transient individuals of some of the same species that breed in Louisiana, as well as at more northern latitudes. We observe, for instance, the passage of Purple Martins even in the last half of April, when the birds of our own local colonies have been here for two months or more and are already beginning to incubate eggs. These late arrivals are possibly individuals bound for the extreme northern limits of the range, where spring is only then appearing.

Although the spring return of the birds that are to occupy our summer woods and fields is to the ornithologist an exhilarating event, the real excitement of the season is provided by the appearance of transient migrants. Many of them are birds of exquisite colors and striking plumage patterns; and since their main passage through the state covers a period of only three to four weeks (or even less for individual species), we are never completely satisfied by our brief association with them. When we see transient migrants at all in southern Louisiana, we generally see them at the coast and in immense numbers, usually on a clear morning after a stormy night. Their appearance is associated with precise weather conditions, and the ornithologist in Louisiana is obliged to be familiar with the kind of weather that produces a precipitation of migrants if he is to assure himself of being in the field on the most advantageous occasions.

For a long time now ornithologists have known that many birds that migrate across the Gulf of Mexico in spring, en route from winter homes in Middle or South America, do not stop on reaching the northern shore but instead fly inland before alighting. The Louisiana Gulf Coast is not, as one might suppose, a strand where myriads of weary transients continually alight on the sight of land. That stretch of coast, which one might expect to be teaming day after day with multitudes of migrants that have just completed the overwater passage from Yucatán or Campeche, is actually, *during fine weather*, an "ornithological vacuum" as far as most small transients are concerned. *During inclement weather*, however, great numbers of trans-Gulf migrants are precipitated on the first available land, and this results in enormous concentrations on our wooded coastal islands and cheniers.

No written description can possibly convey a full appreciation of what the ornithologist experiences on one of these occasions. One who is fortunate enough to be on the coast following the advent of a "norther" is often bewildered by the number of birds present. Grand Isle, Cameron, Marsh Island, and other places on the Gulf shore are often the refuge of such great hordes of incoming migrants that practically every bush contains birds. Small land birds may be counted by the hundreds as an observer stands in one place, and I have personally identified on such an occasion as many as seven species of warblers in one tree. When an event of this sort takes place at the height of the spring migratory movement, the bird student may see in one day most of the species of thrushes, warblers, vireos, tanagers, and grosbeaks that occur in the whole eastern United States. Two days later, however, the same place is likely not to produce a single transient!

The inclement weather that causes these immense concentrations of migrants on the coast is usually associated with cold-front storms. Masses of cold, dry air moving down from the north come in contact with warm, moist air approaching from the south. Advances of the cold-air masses are usually called "northers" or "northwesters." Along the forward edge of the cold air (the polar front), the warm, moist air is forced to rise as a result of being underrun by the heavy wedge of cold air (figs. 21 and 22). Under the decreased pressure

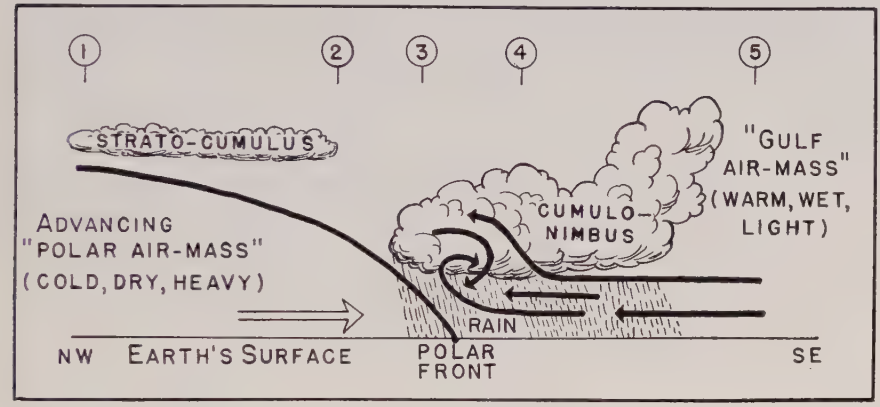


FIG. 21. Idealized vertical section of an advancing cold front and its associated conditions. The above may be taken to represent a distance of 100 miles horizontally and 10 miles vertically, but the scale varies with individual fronts. The rate of advance may vary from 5 to 50 miles per hour. Point 1 lies in polar air; light to medium northerly or northwesterly winds and dry air are typical here. Point 5 lies in warm, humid Gulf air. Point 4 has dense cloud cover, heavy precipitation, and violent, gusty winds. Electrical storms are typical along this "squall line." Higher and thinner clouds, with less rain, characterize Points 2 and 3. At Point 2 there may be only a high cirrus haze. (Reprinted from Lowery, "Trans-Gulf Spring Migration of Birds and the Coastal Hiatus," *Wilson Bulletin*, 57, 1945:93.)

at the higher levels, the warm air expands and cools. Condensation and precipitation result. The forced ascent of the warm, moist air is accompanied by squally winds and torrents of rain, sometimes by hail and violent twisters. As the polar front moves past a given point, the wind at that point shifts from the south into the north. It is apparently a combination of adverse conditions associated with the meeting of the two air masses, and with the northerly winds that follow, that brings migrants down out of the sky. Never, though, are the concentrations that develop anywhere as great as those that appear on the Gulf

islands and coastal ridges. There the amount of favorable habitat for land birds is limited because the wooded areas are surrounded by great expanses of marsh.

When the cold front passes the coast line, any birds still flying over the Gulf sooner or later encounter the adverse effects of the storms along the line of contact between the cold and the warm air masses, as well as the north winds behind the front. These forces impose a barrier of great magnitude to birds in northward flight, and it is therefore not surprising to find them dropping down on the first available land.

The events of April 24, 1953, on the Gulf beach near the village of Cameron, in southwestern Louisiana, will serve to illustrate what the ornithol-

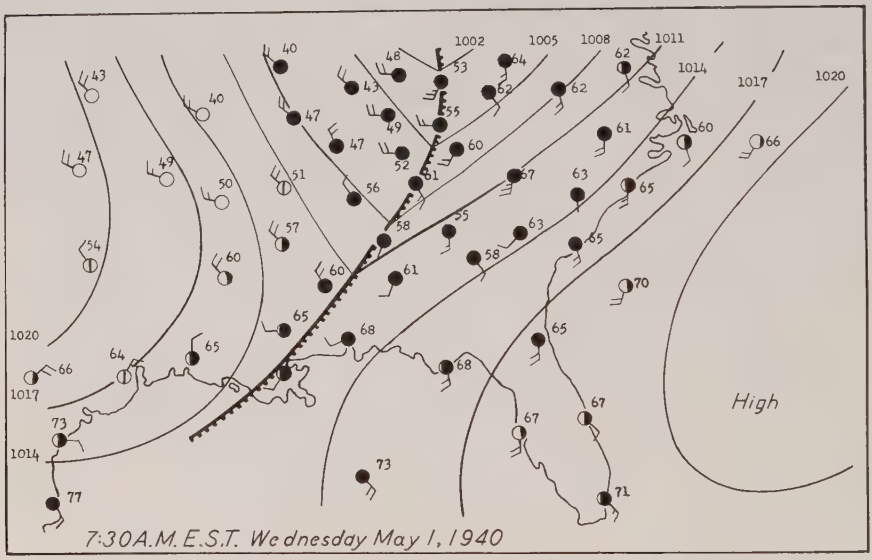


Fig. 22. Weather map showing position of cold front over the southeastern United States on May 1, 1940. The cold front is indicated by the barbed line; the warm front is not shown. The part of the country east of the cold front lies in warm, humid air; the part west of the cold front, in cold, dry air. This can be seen from the temperatures (in degrees F.) at each station. The direction toward which the wind is blowing is shown by the arrows pointing to the circles representing the stations. Wind velocity is indicated by the bars on the arrows, each full bar denoting approximately five miles per hour. The degree of cloudiness is indicated by the extent to which the station ring is filled with black. Figures on the solid lines show pressure in millibars. A record number of transient migrants was observed at Baton Rouge and on the coastal islands of Mississippi where ornithologists were afield on this date. (Reprinted from Lowery, "Trans-Gulf Spring Migration of Birds and the Coastal Hiatus," *Wilson Bulletin*, 57, 1945:93.)

ogist may experience if he happens to be on the coast when conditions are favorable for the appearance of transients. Shortly after midday on this particular occasion the skies became heavily overcast and the southerly winds stronger and more variable. Both the temperature and the humidity were high. Since a "norther" was obviously in the offing, my companion and I immediately went to Willow Island—which is not really an island but a narrow ridge paralleling the Gulf, approximately four miles southeast of Cameron—and there made a search for transients. The only migrant that we found in a small woodland covering approximately ten acres was a single Black-polled Warbler. A few minutes later we walked out into a clearing not far from the Gulf beach and glanced up at the black clouds rushing overhead. Suddenly one of us noticed a succession of dark specks against the clouds, moving in the same direction as the clouds, from south toward north, hence from the direction of the open Gulf, and barely in the range of unaided vision. These "specks," on close inspection with binoculars, proved to be hundreds of small birds.

Most of the birds observed passed out of sight to the north, but not infrequently we would see one suddenly pitch downward, almost as if it were flying headfirst toward the earth, to alight in the clump of trees along the ridge. Only two that we followed with our binoculars from the moment that they began their descent alighted near enough to be identified with certainty. One was an Indigo Bunting, the other a Chestnut-sided Warbler. A considerable number of the larger forms that we could make out against the clouds seemed to be thrushes, judging by their shapes and patterns of flight, but only a few of these were seen to descend. An interesting point is that, except for the main Cameron ridge, on which the highway between Cameron and Creole is located and which, like Willow Island, parallels the coast, no high ground lies to the north of this observation point until some fifteen miles of deep marsh are crossed. It would seem, therefore, that at this particular stage most of the incoming flight was passing over the coastal ridge and flying inland, the very thing that we believe nearly all transients do in fair weather.

After watching the spectacle from our clearing for thirty minutes or more, we could not resist investigating the changes that the descent of a portion of the overhead flight had effected in the ten-acre woodland, where a short while before we had been successful in finding only one lone transient. Walking back into the wood, we discovered that the trees were teeming with birds, some trees with as many as several dozen. Despite the windy and rainy weather conditions that prevailed for the remainder of this eventful afternoon, we

identified 29 species of transients, including 14 kinds of warblers. The wind shifted temporarily into the north in midafternoon, but intermittent rain squalls continued until after dark when the main cold front passed through the Cameron area, bringing cool air and clear skies by the following morning.

In situations such as this the observer cannot possibly inspect every bird carefully, even in a comparatively small area, because of the numbers involved and the nervousness of the birds under windy conditions. The morning following the passage of a cold front is the ideal time to study transients on the coastal islands and cheniers, provided the wind has abated. Small birds are then often very tame while they go about filling their empty stomachs and restoring their energies after their long Gulf flights. I have often stood among the oaks on Grand Isle in spring and in one spot watched dozens of warblers of several species not thirty feet away feeding on the ground and in trees, or drinking from small rain pools.

The birds precipitated on the coastal ridges resume their northward flights after a brief rest. The exodus for the bulk of them generally takes place the first or second night after their arrival, amply demonstrating the recuperative potential of small birds following a great expenditure of energy, as well as the force of the internal drive that sends them toward their summer homes.

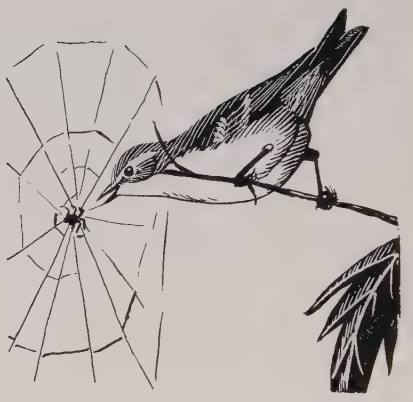
An interesting feature of spring migration in the southern part of the state is the infrequency with which large concentrations of transient migrants are observed in the area lying just north of the coastal marshes. Although the problem requires much additional study, it would seem that several obvious factors contribute to making this area inferior. Trans-Gulf migrants that are not precipitated on the coastal ridges settle down in the extensive wooded swamps lying back of the marshes and are there virtually lost in the vastness of these forests. Indeed, as already suggested, the spectacular character of the days when hordes of migrants are seen on the coastal ridges is in large measure the effect of concentrative forces. These forces bring large numbers of birds from the predominantly unfavorable habitat of the marsh or open water that lies in every direction into the narrow compass of a small but favorable wood. Moreover, when these concentrations resume their northward progress, their first night's flight carries them well over the southern parishes of the state.

At Baton Rouge, which seems to lie on the northern edge of the so-called "coastal hiatus," the observation in spring of night migrants passing before the moon has often disclosed heavy flights involving thousands of birds per mile of

migratory front. Since these birds began their journeys somewhere south of Baton Rouge and were destined to terminate them somewhere to the north of this place, not a single one of them could contribute to the migrant bird population on the ground in this intervening area, while areas farther north could anticipate an increase. Transient migrants are, in fact, observed in numbers and with regularity in northern Louisiana, although, as elsewhere, adverse weather conditions and the disposition of favorable habitat play an important role in producing outstanding concentrations.

In summary, the student of birds in Louisiana who is interested in observing spring migrants must also be something of a meteorologist. Being cognizant of the kind of weather that produces spring migrants enables one to plan field trips in such a way as to be out of doors at the most opportune times. Daily weather maps in newspapers and on television now make it particularly easy for the ornithologist to know well in advance when a "norther" is expected to reach his locality. Such weather maps and the expert forecasts that accompany them provide even the ornithologist living inland with the information he needs to reach the coast ahead of the critical weather and thereby be on the spot when transients begin to appear.

Economic Value of Birds



DESPITE THE FACT that much has been written concerning the economic value of birds, many people still do not appreciate just how important birds are to man and what an essential role they play in preserving the balance of nature. Birds, by the things they eat, perform a service to man in four principal ways: they consume tremendous numbers of noxious insects, they are instrumental in controlling rats and mice, they destroy great quantities of weed seeds, and they help clean the countryside of carrion.

It should be emphasized at the outset that a great amount of study has been devoted to finding out what kind of food each species of bird eats and the proportion of each food in the total diet. This important work has been done mainly by biologists of the U. S. Government, through its agency, the Fish and Wildlife Service of the Department of the Interior. Major food habits investigations were started as early as 1886 when the Fish and Wildlife Service was known as the Division of Economic Ornithology and Mammalogy. Thousands of bird stomachs have been examined, and untold numbers of observations have been made of living birds in the process of eating. Consequently, statements regarding the food of a given species of bird can now be made on the basis of much factual data.

The Year Book of the Department of Agriculture for 1904 carries the statement that in the year the agricultural losses caused by insects in the United States amounted to $795,000,000. Moreover, we find elsewhere the assertion by the Department of Agriculture that insects cause a loss to our forestry and timber interests of approximately $100,000,000 annually. Although we may find it difficult to comprehend the significance of these large figures in terms

of our own personal everyday welfare, they should make us realize the worth of any group of animals that feeds on insects and helps retard their increase.

Most birds have a predilection for a diet of animal matter, either wholly or in part. This is even true of the majority of small land birds. A Yellow-billed Cuckoo was found to have eaten over 2,500 caterpillars, a chickadee had consumed 450 plant lice, and a Common Nighthawk had gorged itself on no less than 60 grasshoppers. The Yellow-shafted Flicker, unlike other woodpeckers, goes to the ground in fields and there has been seen to eat thousands of ants at one sitting, or, according to one observation, over 1,000 chinch bugs. A Scarlet Tanager on one occasion gulped down 630 gypsy moth caterpillars in 18 minutes, while a Common Yellowthroat ate 3,500 plant lice in 40 minutes, or at the rate of over 30,000 in the course of a single morning! We only need to watch the small birds of our yards and gardens to note that nearly all of them are continually in search of food, energetically peering under leaves and along the bark of trees, from which they pick off tiny insects one after another. Flocks of Chimney Swifts and birds such as swallows are seen winging overhead at all hours of the day, engulfing immense quantities of flying insects, such as mosquitoes and gnats.

On the basis of what we know of the volume of insects that birds eat each day, it would be conservative to state that, on the average, each insectivorous bird in Louisiana consumes as many as one hundred insects a day. If we assume that there are at least five insectivorous birds per acre in Louisiana, we discover that no less than twenty-two and one-half million insects are ingested daily by birds in our state. Actually, the real figure is probably many times this number, since the assumption that each bird eats one hundred insects per day is probably much too conservative. This simple computation serves to show us how important birds are in controlling the insect population.

Rats and mice also cause immense economic losses to man. They spread disease, eat grain and other field crops, and destroy seeds and seedlings of forest trees. One species, the Cotton Rat, is regarded by wildlife experts as the second worst enemy of our fine upland game bird, the Bobwhite. (Its worst enemy in many sections of the state is the fire ant that kills the young at pipping time.) Were it not, however, for the large birds of prey, the hawks and owls, small rodents would increase in numbers to the point where they would overrun the countryside. Ample proof of the value of our birds of prey is furnished by the following statistics selected from information gathered by biologists. Of 850 stomachs and crops of the Red-tailed Hawk examined, 754

held some kind of food remains; 654, or more than 86 per cent of these, contained rats, mice, or other small mammals. Of 220 Red-shouldered Hawks examined, 142 held rodents and other small mammals. Broad-winged, Sparrow, Marsh, Rough-legged, and Harlan Hawks, and the Barred, Screech, Short-eared, Long-eared, and Burrowing Owls subsist almost wholly on rodents, insects, and various kinds of reptiles and amphibians. Despite the unfortunate prejudice that most people hold against these fine birds, because of the belief that they eat chickens and game, hawks and owls are actually worth millions of dollars.

Since we are everywhere plagued with weeds, it is rather difficult to appreciate how much birds help us in effecting weed control. One economic ornithol ogist has estimated that the Tree Sparrow destroys no less than 875 *tons* of weed seeds each year in Iowa alone. The Tree Sparrow is a rare bird in Louisiana, but we have many of its close relatives. Some of these are the resident Chipping and Field Sparrows, and hordes of White-throated and other species of sparrows visiting us in winter—all of which spend most of their wakeful moments picking up seeds that they crush in their tiny, conical bills.

Finally, there is the role of scavenger by means of which birds make our world a cleaner and more wholesome place in which to live. Vultures, or "buzzards" as we often call them, feed on virtually nothing but the flesh of dead animals. A carcass on the side of one of our highways that would quickly putrify in our generally warm, humid climate is reduced in a matter of hours by a flock of vultures to a heap of bones. And along our heavily populated bayous and rivers, such as Bayou Lafourche and the Mississippi River near the city of New Orleans, innumerable gulls are performing much the same function.

All these considerations are clearly defined, tangible ways in which birds are an economic asset. But there are still other indirect economic benefits. The State of Louisiana received $429,421 in 1953 from the sale of hunting licenses; and the excise tax on guns and shells, most of which is used in wildlife restoration, amounts to hundreds of thousands of dollars annually. To this must be added the revenue derived by certain people of the state for guide services, for lodging to hunters, for sale of hunting gear, and for numerous other expenses incidental to the pursuit of game birds. No less important are the recreational benefits that birds afford the sportsman and the great many of us who pursue them with binoculars at all times of the year. In terms of human enjoyment and the benefits that accrue to one's health in being out of doors, birds are of inestimable value.

Every bird should be given man's unlimited protection unless it happens to be a species that can withstand hunting in proper season or unless it happens to be one of the very few species (and there are *only three or four*) whose habits are in some way seriously inimical to man's interest. With regard to the latter, it is indeed debatable if even the much indicted Great Horned Owl and the Cooper and Sharp-shinned Hawks, which sometimes eat chickens and game, are really not essential in the preservation of healthy wild populations of the creatures on which they prey (see page 193). We should, therefore, adopt the philosophy that every creature plays some vital part in the scheme of things. The more nearly we can preserve natural conditions, the less likely we are to upset the intricate relationships that exist between animals themselves and between animals and their environment. Each animal is part of the so-called web of life and may be likened to a cog in the wheels of a delicate machine. The unwise removal of a single cog may greatly impair or even stop the entire works. Consequently, we must make careful appraisal of all possible biological implications before we advocate the outlawing of any bird because of its alleged conflict with what we presume to be our best interests.

Conservation and Wildlife Management

LOUISIANA IS ENDOWED with an abundance of wildlife. Some of this wildlife demands rigid conservation if it is to be perpetuated for future generations of Louisiana citizens to enjoy. Fortunately, our state's Wild Life and Fisheries Commission, in conjunction with the United States Fish and Wildlife Service, is performing a highly efficient job in the administration of these valuable natural resources. This is being accomplished by the enforcement of our game laws, by creating more refuges and competently administering those already in existence, and by carrying on carefully planned research and management projects designed to increase our supply of "harvestable" game. Species that cannot withstand hunting pressure are given maximum protection, and those that can be hunted without danger of seriously reducing their effective breeding populations are assigned open seasons proportionate in length and bag limit to the amount of harvesting that each can tolerate.

Possibly the greatest single advances in bird protection in this country were the passage by the United States Congress in 1909 of the Lacey Act and the approval of the Migratory Bird Treaty Act of July 3, 1918. The Lacey Act stopped traffic in egret and other bird plumes, and the Migratory Bird Treaty supplied an agreement between the United States and Great Britain which enacted into law provisions for the protection of migratory birds. In 1936 the terms of the convention between these two nations were extended through a similar agreement between the United States and Mexico. The Migratory Bird Treaty Act provides that the taking of migratory birds is unlawful except as permitted by specific regulations and during carefully prescribed open seasons, such as

those indicated each year for certain waterfowl, rails, coots, gallinules, doves, and occasionally snipe and woodcock. Unlawful to kill at any time are the following: cranes, all shore birds (except as noted above), including avocets, curlews, dowitchers, godwits, phalaropes, plovers, sandpipers, turnstones, willets, and yellowlegs. All insectivorous and most other nongame birds are also protected at all times. These include: "Cuckoos (including road-runner and anis); flickers, and other woodpeckers; nighthawks, or bullbats, chuck-will's-widow, poor-wills, and whip-poor-wills; swifts; hummingbirds; kingbirds; phoebes, and other flycatchers; horned larks; bobolinks, cowbirds, blackbirds, grackles, meadowlarks, and orioles; grosbeaks (including cardinals), finches, sparrows, and buntings (including towhees); tanagers; martins and other swallows; waxwings; phainopeplas; shrikes; vireos; warblers; pipits, catbirds, mockingbirds, and thrashers; wrens; brown creepers; nuthatches; titmice (including chickadees, verdin, and bushtits); kinglets and gnatcatchers; robins and other thrushes; and auks, auklets, bitterns, fulmars, gannets, grebes, guillemots, gulls, herons, jaegers, loons, murres, petrels, puffins, shearwaters, and terns."

Our present state laws are in partial conflict with federal regulations to the extent that the former outlaw the Red-winged Blackbird, which is implicitly protected under federal statutes. Not protected by either federal or state laws are cormorants, vultures, the Great Horned Owl, the Sharp-shinned and Cooper Hawks, crows, the House Sparrow, and the Starling. When any federally-protected bird, such as the Red-winged Blackbird, is found to be doing temporary and local damage to crops and such alleged damage is duly reported to the Director of the Fish and Wildlife Service, United States Department of the Interior, a careful investigation is immediately made by a competent biologist of that agency. If this inquiry into the facts of the case sustains the claim of damage, a special permit is issued to the landowner enabling him to take measures to stop the depredations.

Although hawks and owls are not protected under federal law, attention is here called to the fact that our state legislation outlaws only the Great Horned Owl, the Sharp-shinned and Cooper Hawks, and the Peregrine Falcon (or Duck Hawk). Consequently, all other hawks and owls are protected. The killing of the Bald Eagle is rigidly prohibited by specific federal regulations.

Parents who buy their children air rifles and firearms should make it eminently clear that most cities have ordinances that probibit the discharge of guns within their limits and that state laws forbid shooting from any state road or highway. Moreover, the responsibility of explaining that there are few

nongame birds that can be shot without violation of state and federal laws rests entirely on the parents. More fundamental still is the obligation of every parent to explain to the child the importance and need for wildlife conservation and why it is both unsportsmanlike and morally reprehensible to shoot nongame birds simply to test one's marksmanship. Our hope of maintaining for tomorrow an adequate supply of game and other wildlife depends in large measure on the training we give our young folks today.

On the other side of the picture, it is a matter of real importance that we undertake to interest and to instruct young men and women in the art of hunting (and fishing) and the pleasures afforded by observing animals in the wild. These things provide clean, wholesome recreation. Furthermore, the enthusiastic sportsman is often the most ardent conservationist. He is aware that our natural resources are not a perpetual, inexhaustible legacy, to be enjoyed with no regard for the future.

Louisiana has a fair abundance of game—enough to supply the sportsman with hunting opportunities as long as the annual kill is proportionate to the productivity of the species in question. Quite often the natural crop of game can be greatly increased by improving the habitat conditions under which it lives through planting of additional game foods and by supplying added cover. A corps of state and federal biologists is diligently engaged in the task of devising ways and means of increasing the amount of "harvestable" game for the recreational benefit of the masses of the people. Their determined efforts are already paying tremendous dividends, and we may look with increased confidence to a future of continuing wildlife benefits.

One of the most vital instruments in a sound conservation program is a system of wildlife refuges. In some instances refuges are created to provide protection for a certain class of birds during the season of reproduction. This is the most critical time in the life of any animal, for it is then that the continuity of the species is at stake. Other refuges are set up either to provide a retreat or resting place during the winter hunting season or as way stations along a migratory flyway. It is amazing to watch ducks and geese in our southern marshes settle down on refuge property where the dividing line is simply a barbed wire fence, apparently knowing they are safe on one side of the fence and not on the other.

Refuges are as essential for sedentary birds as they are for migratory species, for in these protected spots maximal populations build up and overflow into surrounding areas. These state and federal refuges comprise large blocks of

land that are divorced from commercial interests, which are all too often adverse to the general welfare of wildlife. On privately-owned lands monetary considerations lead to drainage, to the clearing of the forest, or to other exploitations that often makes the land unsuitable for game and other wild creatures existing there. Indeed, an intensive nationwide drainage and land reclamation program in the 1930's, supplemented by a severe drought, nearly caused the extermination of several species of ducks and a drastic reduction in the population of others. Small potholes of marsh scattered through the central Great Plains region, where great hordes of ducks normally nested, became uninhabitable. When the birds failed to breed and raise new broods, only a few years elapsed before their population levels were below the critical threshold. Some species might have joined the ranks of the Labrador Duck and the Passenger Pigeon had not our nation awakened to the seriousness of the situation and plunged into the most vigorous conservation program ever undertaken anywhere. Large sections of submarginal land, forming a network from the Canadian boundary to the Gulf Coast and Mexican border, were acquired by the federal government and reconverted to duck marshes by the installation of dams and reservoirs to raise water levels and by the planting of duck foods. Bag limits were reduced and hunting seasons curtailed. Special schools were formed at a few leading universities to train wildlife specialists to carry on the expanding program of management and research. Biologists already well versed in the techniques of censusing wildlife journeyed north in summer to obtain a check on breeding success and traveled south in winter to appraise the winter survival. Parasitologists and bacteriologists sought out the cause and possible treatment of botulism, a serious duck disease; and chemists explored ways of treating or coating the lead shot in shotgun shells to prevent the disastrous losses suffered by ducks from lead poisoning caused by swallowing spent shot. Wildlife technicians, aided by a host of amateur ornithologists, banded thousands of ducklings to find out where the breeding population of a given area spends the winter and the routes followed in getting there. Sportsmen in towns and cities everywhere organized local wildlife clubs, and these joined into state and national wildlife federations—all of which did a fine job of arousing public opinion in support of better wildlife legislation. *Ducks Unlimited* came into existence and began an auspicious program of providing additional duck breeding areas in the United States and Canada, greatly supplementing the works of the two governments. To all this effort was added the magnificent work of the National Audubon Society, which has long been devoted to a vigorous program of wildlife preservation.

FIGURE 23.

Federal Refuges:
16 Lacassine National Wildlife
17 Sabine National Wildlife
18 Breton Bird
22 Delta National Wildlife

State Refuges:
1 Morehouse
3 Chicago Mill and Lumber Company and Ayer Timber Company
5 Ayer Timber Company
7 Catahoula
11 Evangeline Parish
14 St. Tammany Parish
19 Marsh Island
20 Paul J. Rainey-State Wildlife
21 Rockefeller
23 Pass a Loutre

Pittman-Robertson Game Management Areas:
2 Union Parish
4 Jackson-Bienville Parish
6 Caldwell Parish
8 Red Dirt
9 Sabine Parish
10 Grant-Rapides Parish
12 West Bay
13 Zemurray
15 Livingston Parish

The ever-increasing success of this enormous program is now common knowledge to every person interested in the conservation of wildlife. While

much remains to be accomplished, we can at least look with pride on the fact that no longer is any species of waterfowl in the United States and Canada, except possibly the Trumpeter Swan, in danger of extinction. The Wood Duck, Redhead, and Bufflehead, which experts gloomily declared two decades ago to be doomed, are now back with us in numbers. Under the watchful eyes of the wildlife technicians all major fluctuations in waterfowl populations are quickly detected and given careful appraisal. As long as the program remains operative, only a national disaster of the greatest magnitude can reduce wildlife conditions in this country to the low levels reached not so many years ago.

In Louisiana alone there are over 925,000 acres of state or federal wildlife refuges and wildlife management areas (fig. 23). Of this total approximately 139,000 acres are owned or leased by the state and administered by the Wild Life and Fisheries Commission, with federal aid, primarily for upland game restoration, management, and protection. There are approximately 508,000 acres set aside for waterfowl areas under the capable administration of either the Fur and Refuges or the Game and Fish Divisions of our Wild Life and Fisheries Commission. Over 250,000 acres go to make up the federally owned Sabine, Lacassine, and Delta Migratory Waterfowl Refuges, and Breton Bird Refuge. The Paul J. Rainey Wildlife Refuge, in Vermilion Parish, consisting of 26,000 acres, is owned and operated by the National Audubon Society. Many of these coastal refuges, such as the Breton Refuge, are vitally important in the protection of our sea bird nesting colonies.

Attracting Birds

A GREAT DEAL of everyday pleasure can be experienced by those who employ a few simple devices for attracting song birds to their lawns and gardens. One of the easiest means is to set up feeding tables in view of living room, bedroom, or dining room windows where visitors to the trays will be in plain view. Feeding trays are best placed on an arm projecting from the side of a tree or else suspended from a limb. Table scraps that do not contain excessive amounts of salt make good bird food, but most people supplement them with cheap grades of cracked corn. An especially attractive food is pulverized pecan meat, which sometimes can be obtained cheaply as refuse from pecan shelling plants. Pecan meat mixed with rendered suet is a more nutritious combination than either ingredient alone, and mixed with suet the pecan meat goes further. One user of pulverized pecan meat reports that no fewer than 42 species of birds have visited his feeding table.

Hummingbirds are often attracted in numbers to the garden if one hangs red-lacquered vials filled with sweetened water. I once knew a lady in Monroe who possessed the most remarkable aptitude for dispelling fear on the part of the feathered visitors to her gardens—a faculty so many of us lack, possibly because we do not possess enough patience. At any rate, I have seen this lady hold a vial of sweetened water between her lips and with her head tilted back have Ruby-throated Hummingbirds come and drink within inches of her face. What an experience it must be to look into the eye of a hummingbird, to be able literally to count the feathers of its flaming gorget!

Bird houses are readily occupied by certain kinds of birds and sometimes

bring elusive species close to the home where they can be enjoyed. The gregarious Purple Martin usually requires a special, multi-compartmented box, but nest boxes for other species can be constructed along the simple general lines of the bottom diagrams in Figure 24, provided the relative dimensions are varied to suit the various species, with particular attention to the size of the entrance hole. Specifications for houses for birds of various sizes are given in Table 2. "Depth of Cavity" refers to the greatest inside depths of the box; "Height of Entrance," to the distance from the center of the hole to the floor. The front of the box can be made from a section of hardwood slabbing, with bark still intact, obtainable at a sawmill; this gives the box a rustic or natural appearance.

TABLE 2.

RECOMMENDED SPECIFICATIONS OF BIRD HOUSES FOR CERTAIN EASILY ATTRACTED SPECIES

Species	*Floor of Cavity (Inches)*	*Depth of Cavity (Inches)*	*Height of Entrance (Inches)*	*Diameter of Entrance (Inches)*	*Height above Ground (Feet)*
Wood Duck	10 x 18	22	16	4	10 - 20
Screech Owl	8 x 8	14	10	3	10 - 30
Downy Woodpecker	4 x 4	10	7	2	6 - 20
Red-bellied Woodpecker	6 x 6	14	10	2½	12 - 20
Great Crested Flycatcher	6 x 6	10	7	2	8 - 12
Purple Martin	7 x 7	7	2	2½	12 - 17
Chickadee	4 x 4	8	5	1¼	6 - 15
Tufted Titmouse	4 x 4	8	5	1½	6 - 15
Carolina Wren	4 x 4	9	6	1½	5 - 10
Bluebird	5 x 5	9	6	1½	5 - 10
Prothonotary Warbler	4 x 4	8	5	1½	4 - 7

Few birds that can be attracted to the premises of our homes are as enjoyable as Purple Martins. They are highly sociable birds that seem to enjoy living near man. The male is resplendent in his blue-black coat, and his song and the answering notes of his mate are pleasant sounds indeed to hear outside our windows. Although the Purple Martin will nest in boxes of only a single compartment, it prefers nest boxes of many rooms.

My experience has been that the type of martin house illustrated in Figure 24 is superior to all others, particularly since all compartments face one side. This arrangement allows all the birds in the colony to be seen from

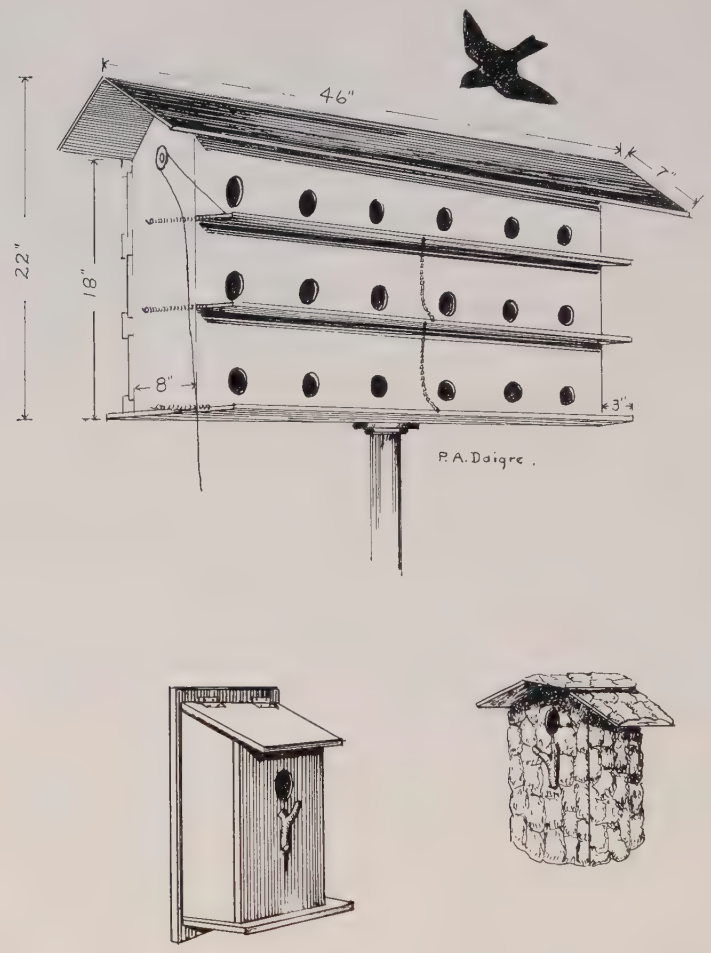


FIG. 24. Bird houses. *Upper*: A Purple Martin box, described in the text, that also serves as a banding trap. *Lower*: Two easily constructed boxes that can be made suitable for a variety of species simply by altering the proportions according to specifications given in Table 2.

a certain window or from a sitting porch, whereas in houses with compartments on all sides, only a portion of the colony can be observed from a single vantage point. This martin box has other desirable features: it can serve as a trap for those desiring to band the occupants, and it can be easily cleaned of the nests of House Sparrows. Access to the interior of each compartment is readily gained simply by sliding one of the back panels to the right or left. Occupants are trapped for banding by pulling the cord that raises the hinged porches. A study of the drawing will show that there is a four-inch section of a screen door spring attached to the front edge of each porch and secured on the end wall of the house. The tension is straightaway, but as soon as a pull of the cord raises the front edge of the porch above the horizontal, the tension of the spring snaps the porch against the house, closing the entrance holes. The three porches operate in unison since they are connected by a small chain. The trap, of course, in sprung after dark when the occupants are at roost. Since there is ample ventilation, the martins can be left entrapped until the following morning when banding can be done and the birds released in daylight.

Martin boxes are best placed on a pole in the open, or at least where the box itself towers above surrounding shrubbery. Fifteen feet above the ground is an ideal height, for the box can then be conveniently reached by climbing a ten- or twelve-foot step ladder. A two-inch galvanized pipe set in a small amount of concrete makes the most satisfactory pole, especially when the weight of a sixteen- or twenty-room house is involved. Since a standard length of pipe is twenty-one feet in length, it is necessary either to cut off several feet or else to dig a very deep hole in the ground. One end of such a section of pipe comes already threaded; hence the box can be mounted on the pole by using a two-inch floor flange affixed to the bottom of the box with wood screws.

A martin box made of poor lumber and put together with nails will generally warp and come apart in one season, but a well-constructed box will last for many years. When built of cypress, put together with brass screws, covered with roofing material, and painted regularly every year or two, it will long withstand the elements. There is a box in my front yard that was constructed in January, 1944, and it appears to be almost as good today as in the year it was built.

In building a martin house, care should be taken to put on plenty of porches, for the birds seem to like to have these flat surfaces on which to alight and bask in the sun. Also, the bottom edge of the holes leading into the compartments should be close to the level of the porches to accommodate the

martins, which, because of their short legs, would have difficulty in scrambling over a higher barrier. The main problem in trying to entice martins to boxes is the fact that House Sparrows sometimes take over before the intended occupants return from their winter quarters in South America. To combat the sparrows, I clean my boxes thoroughly in the last few days of January, just before the martins return, and then repeat the job around the end of February. Unless the sparrows are allowed to cram all the compartments with grass, the martins will claim their share of rooms and ward off excessive numbers of uninvited guests. When there are only a few House Sparrows, they may be either trapped or shot.

A bird bath is another effective means of attracting birds. Where there is a hydrant at hand, an excellent bird bath can be made by building up a pedestal of broken pieces of concrete and placing a pan on top in position to catch the drip of water from the faucet. A low structure such as this, however, may place the users at the mercy of cats. Anyone desiring to construct a more predator-proof bird bath at nominal expense can do so by using a length of four-inch concrete pipe as the pedestal and two discarded plow discs as part of the form for the construction of the bowl (see figure 25). One well-greased disc is placed on a platform of wood with a six-inch length of one-half inch pipe standing upright through the square hole in the center of the disc and set into a hole one-half inch in diameter drilled in the wooden platform beneath. Two three-inch wide strips of galvanized sheet metal are wrapped around the perimeter of the disc and are fastened together on each side with stove bolts, as shown in Figure 25. Reinforcing wires are placed in proper position. Then concrete made with white cement is poured into the form. The second greased plow disc is next pushed down into the concrete in the form and rotated on the upright pipe to smooth out air pockets. The pipe in the center should be turned occasionally while the cement is setting in order that it may be easily withdrawn later. It is often desirable to supply the bird bath with water from a pipe passing up through the pedestal and out through the center of the bowl. This is quite easy to do, since there is already a one-half inch hole in the center of the bowl. Otherwise, this hole must be plugged with cement. The footing for the pedestal is made by building a small boxlike form approximately fourteen inches square and four inches in depth and standing the concrete pipe in its center, the flared end down, and finally, by pouring cement into the box around the base of the pipe. The attachment of the pedestal to the bowl is achieved by turning the bowl bottom side up, standing the

FIG. 25. An economically constructed home-made bird bath. The top figure shows the finished structure. The bottom figure shows the form into which concrete is poured to make the bowl. (See page 92.)

pedestal over the center, and pouring concrete into a special metal collar about two inches wide and about eight inches in diameter. The total cost of a homemade bird bath of this type is less than $3.00, only a fraction of the price of those usually seen for sale.

Certain trees, shrubs, and herbaceous plants bear fruits that are attractive to birds. Such plants are in themselves ornamental, and they also serve to draw birds away from cultivated fruits. As a rule birds like acrid or sour fruits that are generally unpalatable to man. When certain birds peck into cultivated fruits, it should be remembered that they are often after a worm. A few red mulberry (*Morus rubra*) or wild cherry (*Prunus serotina*) trees on the premises will usually toll birds away from other fruits, for these two trees are prime favorites. Other attractive fruits are borne by privets (*Ligustrum*), the various hollies (*Ilex*), the hackberry (*Celtis laevigata*), the firebush (*Pyracantha coccinea*), the camphor tree (*Cinnamomum camphora*), the mayhaw and other haws (*Crataegus*), the pokeberry (*Phytolacca americana*), the spice bush (*Lindera benzoin*), the elderberry (*Sambucus canadensis*), the French-mulberry (*Callicarpa americana*), the turksturban (*Siphonanthus indicus*), and numerous others. Red salvia (*Salvia splendens*), rosa-de-montana (*Antigonon leptopus*), and various kinds of *Hibiscus* are especially attractive to hummingbirds.

Ornithological Societies and Bird Clubs

THE GREAT INCREASE in interest in birds on the part of the lay public in the last twenty years has led to a phenomenal expansion in membership in all the established ornithological organizations of this country and to the founding of many new ones, particularly groups of regional or local scope. The city and state bird clubs provide bird students of an area with the opportunity to become acquainted with persons of similar interest, to compare notes, and to enjoy field trips together. The national and some state organizations hold annual conventions and publish scientific journals, usually as quarterlies, that contain both short and long articles dealing with recent advances in ornithology, field observations, life histories, accounts of expeditions, and results of studies in the museum and laboratory.

Anyone in Louisiana who has the slightest interest in birds should immediately affiliate with the Louisiana Ornithological Society. This organization was founded in 1949 and already has over two hundred members. Membership is open to all persons seventeen years of age or older. State-wide meetings are held at least once a year in one of the larger towns of the state or in some spot particularly favorable for birds, such as the coast at Grand Isle or Cameron. In connection with the meeting on December 6, 1952, at Cameron, the group observed 4,336 birds of no less than 114 species. Three weeks later in the same general area a party of L. O. S. members counted 52,781 birds of 142 species.

There are active chapters of the L. O. S. in New Orleans and Baton Rouge. In Shreveport the Society for Nature Study plays a similar role. Monthly meetings and numerous field trips are scheduled, usually from September to May. The indoor gatherings feature short talks by members, movies,

or, in the case of Baton Rouge, the study of museum specimens of the common birds of the particular season in which the meeting is being held. Anyone desiring to participate in these activities can do so simply by applying to the Secretary-Treasurer of the Louisiana Ornithological Society. (Address in care of Museum of Zoology, Louisiana State University; annual dues, $1.00.)

The serious student of birds rapidly becomes engrossed in problems of avian distribution, the mechanics of migration, details of life histories and habits, or one or more of the many facets of ornithology. Therefore, he will want to affiliate with one of the national societies in order that he may attend its annual conventions and receive its journal, thereby keeping abreast of new discoveries in the science.

The largest and perhaps the most important ornithological society in the world is the American Ornithologists' Union, which was founded in 1883 and now has approximately 3,000 members. Conventions held each year, usually in September or October, feature sessions for the reading of papers (some by the world's outstanding ornithologists), social gatherings, and field trips. The 1952 convention of the A. O. U. was held in Baton Rouge with 288 persons attending, including representatives from five foreign countries. The official organ of the A. O. U. is *The Auk*, which is now in its seventy-first volume. Each volume contains approximately six hundred pages, and the articles cover every aspect of ornithology. The journal is free to all members, and membership in the organization is unlimited. (Application blanks can be obtained from the Louisiana State University Museum of Zoology, or by writing to any of the officers of the A. O. U., including the Secretary, Dr. Harold Mayfield, 2557 Portsmouth Avenue, Toledo 13, Ohio; annual dues, $4.00.)

Other important ornithological societies are:

Cooper Ornithological Society. Founded 1893. Organ, *The Condor*, published six times a year and free to members. (Address in care of Museum of Vertebrate Zoology, University of California, Berkeley 4, California; annual dues, $4.00.)

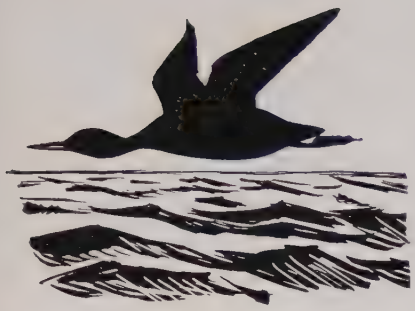
National Audubon Society. Founded 1902. Publishes *Audubon Magazine* and *Audubon Field Notes*, each six times a year, the latter comprising the Christmas Bird Count and seasonal summaries of the bird life in the United States. (Address, National Audubon Society, Audubon House, 1130 Fifth Avenue, New York, N. Y.; subscription, $3.00 a year each.)

Wilson Ornithological Society. Founded 1888. Organ, *The Wilson Bulletin*, published quarterly and free to members. (Address in care of Phillips B. Street, Exton, Pennsylvania; annual dues, $3.00.)

Accounts of the Species

MAP OF
LOUISIANA
SHOWING PRINCIPAL LOCALITIES
MENTIONED IN TEXT
CADDO LAKE
CROSS LAKE
SHREVEPORT
MINDEN
RUSTON
FARMERVILLE
OAK GROVE
MER ROUGE
LAKE PROVIDENCE
MONROE
TALLULAH
JONESBORO
WINNSBORO
MANSFIELD
COLUMBIA
WINNFIELD
NATCHITOCHES
JENA
FERRIDAY
MANY
CATAHOULA LAKE
ALEXANDRIA
LEESVILLE
BUNKIE
KENTWOOD
BOGALUSA
DeRIDDER
OAKDALE
ST. FRANCISVILLE
JACKSON
NEW ROADS
BAYWOOD
DeQUINCY
OPELOUSAS
BATON ROUGE
HAMMOND
COVINGTON
MANDEVILLE
SLIDELL
LAKE PONTCHARTRAIN
LAKE CHARLES
CROWLEY
LAFAYETTE
GUEYDAN
ABBEVILLE
NEW IBERIA
CALCASIEU LAKE
THIBODAUX
NEW ORLEANS
LAKE BORGNE
JOHNSONS BAYOU
CREOLE
LITTLE CHENIER
AVERY ISLAND
FRANKLIN
NAPOLEONVILLE
HOLLY BEACH
CAMERON
GRAND CHENIER
MORGAN CITY
ROUMA
CHANDELEUR ISLANDS
MARSH I.
GOLDEN MEADOW
BURAS
PILOTTOWN
GRAND ISLE
E. TIMBALIER I.
ISLE DERNIERE
SCALE - MILES
10 0 10 20 30 40 50
LOUISIANA GEOLOGICAL SURVEY

FIGURE 26.



LOONS

Order *Gaviiformes*

The Loon Family:

Gaviidae

COMMON LOON. *Gavia immer.* Figs. 27, 28

The expression "crazy as a loon," although often used, has little meaning to most people of this state, for the bird's mad, laughing call that has given rise to the phrase is uttered mainly on its breeding grounds in the North. I have heard this weird sound only once in Louisiana, and then it came from one of two birds, possibly a mated pair, that I watched late one spring afternoon as they flew up the Mississippi River—two birds that were possibly just beginning their long migratory flight to a spruce- or birch-rimmed wilderness lake in some northern forest.

The Common Loon comes to us in the latter half of October and remains sometimes as late as May or early June. Generally it is a bird of large bodies of water, such as Lake Pontchartrain and the numerous bays and lagoons of our coastal belt. In these French-speaking sections it often goes by the name *grand plongeon*, the equivalent of "great northern diver," one of the names by which it is known in its nesting areas. Most of the time that this loon is with us the plumage is dark gray above and white below. In spring, though, the head and neck become black. The back also becomes black, but is finely spotted with white. Its body bulk is about that of a goose. On the water it somewhat resembles the cormorants, or "nigger geese," but the latter have much smaller bodies and tilt their hooked bills decidedly upward. The bill of the Common Loon is held horizontally and is sharply pointed; as a matter of fact, except for the Anhinga, loons are the only large diving water birds of "duckish" posture with pointed bills. The Anhinga has a thin, snakelike neck, an exceedingly long tail, and the habit of swimming with its body submerged. Both the Anhinga and the cormorants are quick to take flight when alarmed, and they perch in trees, while the loons seldom leave the water and never alight in trees.

Biologists regard the loons as "primitive" birds because in some of their structural characteristics, notably the bones of the skull, they are strongly reminiscent of reptiles, the group of animals that some two hundred million years ago gave rise to birds. But, despite the lowly position of loons in our

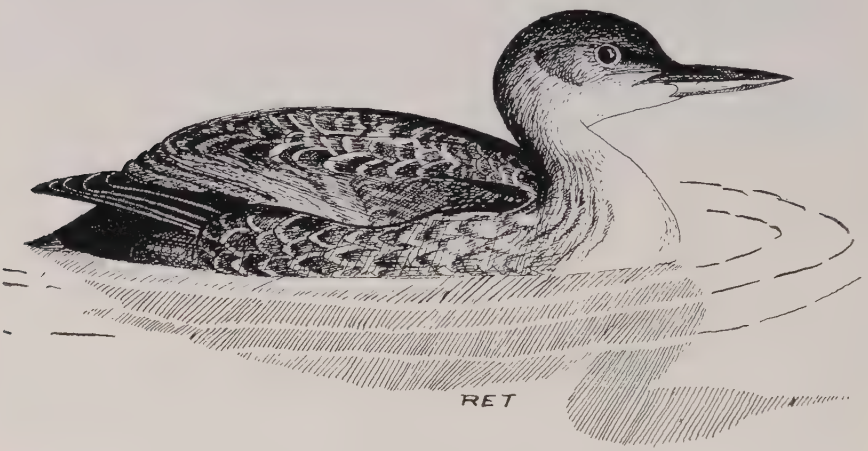


Fig. 27. Common Loon in winter plumage.

system of bird classification, they are marvelously specialized in many ways, particularly in regard to their adaptations to a life on the water. The hind limbs are located just about as far back on the body as is possible, and they are shortened to provide greater leverage as swimming paddles; the toes are fully webbed. So well adapted is the loon for its aquatic habitat that it is helpless on land; it cannot take flight except from the surface of water. To escape its enemies it dives and swims great distances under water. But, small and apparently as weak as the wings seem to be, they serve to carry the great bird hundreds of miles nonstop on its migratory flights to and from its nesting grounds.

RED-THROATED LOON. *Gavia stellata.* Fig. 28

This is an accidental winter visitor to Louisiana. There is but a single known instance of its occurrence in the state: an individual was observed on several occasions between December 23 and 30, 1945, on False River, opposite New Roads, in Pointe Coupee Parish. The Red-throated Loon resembles the Common Loon but is considerably smaller, being about the size of a Mallard.

Moreover, the Common Loon is such a dark gray that it appears to be black at a distance, while the Red-throated Loon is only an ashy gray. Indeed, the gray of its head and hind neck is so pale that it merges into the white of the

FIG. 28. Heads of loons in silhouette.

throat and fore neck without the sharp contrast characteristic of its larger relative. The bill of this species tilts slightly upward at the tip. It breeds far to the north, mainly in the Arctic Region. In the summer on its nesting grounds it takes on a much more ornate plumage, in which the throat is rufous-red.

GREBES

Order *Colymbiformes*

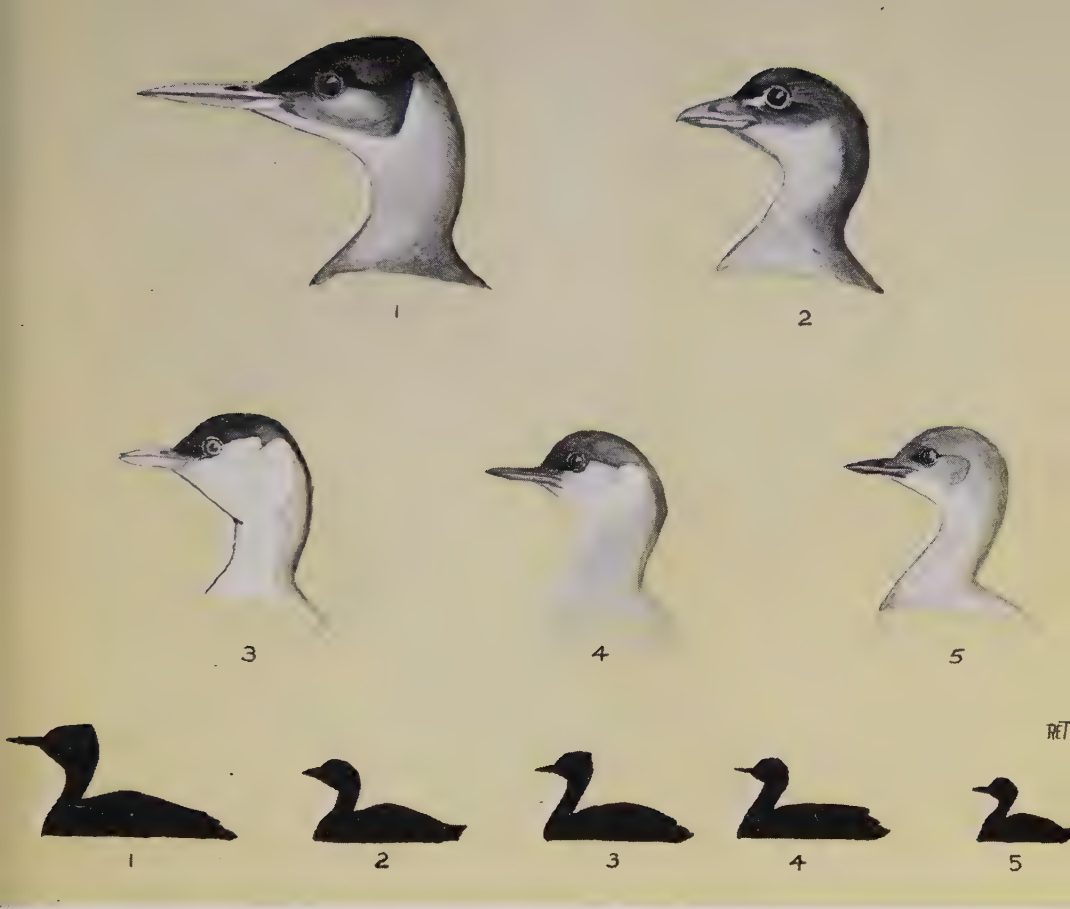
The Grebe Family:

Colymbidae

The grebes are ducklike water birds of world-wide distribution and are closely related to the loons, but they differ structurally in many ways from both ducks and loons. The head and neck of grebes are held erect, seldom hunched down on the shoulders like a duck's. This and the fact that they appear tailless (indeed, the tail is a mere tuft of short straggly feathers) makes them immediately distinguishable from ducks.

The legs, like those of their relatives the loons, are located far back on the body as an adaptation for diving and swimming; but the toes, instead of being fully webbed, are provided with scalloped fringes and the toenails are broadly flattened to conform with the flat toes (see figure 33). The tarsi are likewise flattened but in a lateral plane so that they knife through the water. The whole foot is, therefore, a combination of adaptations for swimming. Possibly the most remarkable feature of the grebes is their ability to submerge instantaneously, hence the French name *sac-á-plomb*, or "sack of lead." One often hears it said that you cannot shoot a grebe as long as it is watching, for at the flash from the muzzle, the bird submerges and is gone before the pellets arrive. Another remarkable feature of the grebes is their ability to sink straight downward, and to any desired depth. Sometimes only the head remains above the water. Ducks and other water birds usually lunge forward and then downward, bill first.

So bound are grebes to their life on the water that they are rarely seen in flight. When danger approaches, they simply submerge and swim away beneath the surface. In order to take flight, they must run for a considerable distance across the surface of the water. I know of an instance of a Pied-billed Grebe remaining in a pond that was rapidly drying up, apparently without the grebe's realizing it. When spring came there was no longer a sufficiently long "take off strip," and the bird had to stay there and forego its migration and



Explanation of *Plate I*

Heads and Silhouettes of Five Grebes in Winter Plumage

1. Red-necked Grebe (p. 103). **2.** Pied-billed Grebe (p. 104). **3.** Horned Grebe (p. 103). **4.** Eared Grebe (p. 103). **5.** Least Grebe (p. 104).

nesting. Despite a grebe's reluctance to fly, the bird takes to the air on its short, stubby wings and travels great distances to its main nesting areas farther north once the migratory urge manifests itself.

RED-NECKED GREBE. *COLYMBUS GRISEGENA.* Pl. I; fig. 29

The Red-necked or "Holboell" Grebe is a rare winter visitor in Louisiana. There is but one record for the state, that of an individual shot on Catahoula Lake on December 2, 1937. The large size of the Red-necked Grebe as compared to the other grebes found in Louisiana is shown by Figure 29. This, together with its large *yellowish bill*, is said to distinguish it readily in the field. It might be mistaken for a Red-throated Loon but differs in having the top of the head blackish and the neck dark gray (instead of white in front and pale gray behind). There is also a white, somewhat crescent-shaped mark on the head, extending from the throat around the back of the cheek to the upper nape.

HORNED GREBE. *COLYMBUS AURITUS.* Pl. I; fig. 29

The Horned Grebe is a fairly common winter visitor, from late October to the last week of March, on large lakes and bays, particularly in the southeastern part of the state. It is especially numerous on False River, in Pointe Coupee Parish, where more than 50 individuals can sometimes be counted. On the water at a distance, these grebes appear predominantly white in their winter dress. The upper parts are actually gray and only the under parts are immaculate white. In these respects the Horned Grebe differs greatly from the common Pied-billed Grebe, which is brownish all over. In southern Louisiana the Horned Grebe is called the *plongeur*, or "diver." Its molt into the breeding plumage, with its rufous neck, greenish-black head, and large buffy "ear" patches (hence *Horned* Grebe), is sometimes completed just prior to the bird's departure in early spring.

EARED GREBE. *COLYMBUS CASPICUS.* Pl. I

This is another one of the grebes that apparently only casually visits our state in winter; there are but eight definite records—that of an individual seen on November 28, 1948, at Cross Lake, near Shreveport; another at the same place on October 18, 1952; three there the following day, as well as on January 31, 1954; one seen near Cameron on January 2, 1954, and collected the following day; and another taken near Cameron on February 28, 1954;

three collected at Redfish Point, in Vermilion Parish, on December 1, 1954; one seen on False River, near New Roads, on December 24 and 26, 1954; and, finally, one observed near Holly Beach on December 31, 1954.

Actually, however, the Eared Grebe may be far more common than we suspect, because in winter plumage it is similar to the Horned Grebe. It differs primarily in the fact that its head, throat, and hind neck are much grayer (less whitish) than in the other species. A whitish spot just back of the ear stands out in contrast to the dingy color of the remainder of the head and upper neck, and this spot can be seen at a considerable distance. Students of Louisiana birds should scrutinize all grayish grebes very closely; doing this will doubtless produce additional winter records of this species in the state. Both this species and the Horned Grebe are striking in appearance and colored differently in breeding plumages. They both nest in the northern United States and Canada.

LEAST GREBE. *Colymbus dominicus.* Pl. I

This grebe is known from Louisiana on the basis of a single record. One was detected on the lake behind our State Capitol building at Baton Rouge on December 14, 1947. The individual was shot and later placed in the museum at Louisiana State University. Had the specimen not been secured, considerable doubt would have been attached to the validity of the identification, so closely does this species resemble the winter-plumaged Pied-billed Grebe. The size of the Least Grebe is approximately one-half that of the Pied-billed, but this becomes apparent only when the two are together for direct comparison. The bill is slimmer, relatively longer, less chickenlike in shape, and appears to be slightly upturned on the end. Additional Red-necked Grebes may be confidently looked for in our state in winter, but I suspect that the one Least Grebe record is that of an accidental wanderer, despite the fact that there is some evidence that the species may be slowly extending its normal range northward and eastward along the Gulf Coast from the lower Rio Grande Valley and Mexico.

PIED-BILLED GREBE. *Podilymbus podiceps.* Pl. I; fig. 29

Every Louisianian familiar in the least with the out-of-doors knows this common inhabitant of our lakes and ponds, although in most instances by the names "di-dipper" and "hell-diver." A few individuals remain in the interior

of the state through the summer months and raise broods of young, but the species is abundant only in winter, when it is present even in the coastal marshes. The floating nest is composed mainly of debris and is generally anchored to a few stalks of some aquatic plant. Almost as soon as the eggs hatch, the highly precocial downy young take to the water and within an hour are swimming and diving like veterans. The name "Pied-billed" is based on the fact that the bill in spring and summer has a black ring near the end. In early spring the species undergoes a partial molt whereby it acquires a black throat patch and a generally darker (less brownish) coloration throughout.

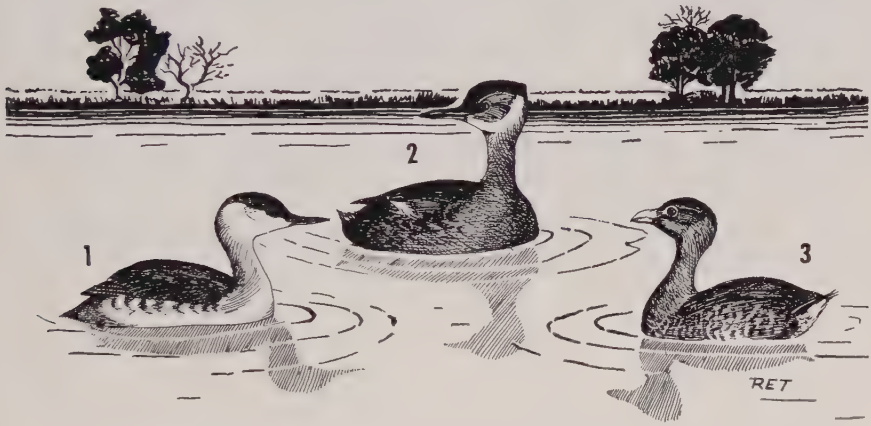


FIG. 29. (1) Horned Grebe; (2) Red-necked Grebe; (3) Pied-billed Grebe.

PETREL-LIKE BIRDS

Order *Procellariiformes*

THE VAST WATERY expanse of the open oceans that make up approximately three-fourths of the earth's surface would seem to constitute a habitat probably devoid of birds, despite the great mobility that these creatures possess. To the contrary, the oceans are far from sterile of bird life. The members of one whole order, the Procellariiformes, and to a lesser extent several others, are denizens of the sea and dependent on it for their existence. They come to land only to rear their young, which they do in burrows in the ground or in crevices in rocks. The remainder of their lives is spent coursing over the waves of the high seas, presumably roosting at night on the water itself or on floating masses of seaweed or debris. In the hand a specimen of a procellariiform bird is seen to possess nostrils that open to the surface through tubular structures (fig. 30) on the top of the bill instead of through mere slits—hence the name "Tubinares" that has been applied to the petrels and their close relatives. The classical albatross of the Ancient Mariner is the Wandering Albatross, a giant member of this same group with a wingspread of eleven feet.

[THE SHEARWATER FAMILY: *Procellariidae*]

[AUDUBON SHEARWATER. Figs. 30, 31]

PUFFINUS LHERMINIERI.

The Audubon Shearwater's doubtful claim to a place on the list of the birds of Louisiana rests on the recent observation of a group of approximately 100 individuals (and the collection of two of them)

in the state's offshore Gulf waters, sixty-four miles east of the mouth of Southeast Pass, one of the delta channels of the Mississippi and the point of closest land. This important record was obtained on August 26, 1954, at latitude 28°54′N, longitude 88°00′W, by Stewart Springer and Harvey R. Bullis, biologists of the U. S. Fish and Wildlife Service's exploratory and research vessel, the M/V *Oregon.* Although the position at which the birds were first found lies almost due south of Mobile, Alabama, its distance from Mobile Point, the otherwise closest land aside from Louisiana, is approximately ninety-two miles. On the following day, August 27, the shearwaters were observed even closer to the delta of the Mississippi River, at latitude 28°50′N, longitude 88°34′W, approximately thirty-three miles from Southeast Pass.

FIG. 30. Lateral and dorsal views of the heads of the Audubon Shearwater (left) and the Wilson Petrel (right). The openings of the nostrils in both are at the end of tubular structures situated on top of the culmen. In the shearwaters there are two distinct openings, but in the petrels the dividing partition is not visible externally and hence there appears to be but a single orifice.

As in the case of two species of jaegers, which have been seen in numbers along the continental shelf off Cameron and Vermilion Parishes and off the delta of the Mississippi River, the question arises as to how close inshore a pelagic bird must appear in order to merit inclusion on a state list. No criterion seems to be wholly satisfactory. The limits of the so-called "historic" offshore boundaries of a state are subject to dispute between certain states and the federal government in connection with oil lease rights. However, other criteria such as "the edge of the continental shelf," "seen from land," "seen from

some point within sight of land," and "a dead bird washed up on the beach," are all likewise subject to one or more criticisms. Consequently, in deciding what policy to follow, I have been more or less arbitrary. Ten and one-half miles is the distance claimed by Louisiana as its historic offshore boundary; hence, I have accepted no record of birds beyond this distance from shore when such records provide the sole basis for the inclusion of that bird on the state list. Accordingly, the headings to accounts of the Audubon Shearwater and the two species of jaegers are enclosed in brackets to set them apart, and the three species are not counted in the totals on page 19.

FIG. 31. Audubon Shearwater.

The real importance, however, of the recent observation of the Audubon Shearwater is not whether the record provides the basis for the inclusion of the species on the state list, but the fact that the species has not been observed alive anywhere in the Gulf area since the time of John James Audubon, who claims to have seen it in numbers in June off the western shores of Florida (he does not tell us how far offshore). The only other record for the Gulf is that of a dead bird picked up on Brazos Island, Texas, on January 28, 1947. The Audubon Shearwater breeds in the West Indies, but, like other members of the order Procellariiformes, it seldom, if ever, visits land of its own accord outside of the breeding season. Thus most of its life is spent wandering over the open seas.

In their general appearance shearwaters suggest gulls but may be readily distinguished from gulls by the manner in which they rapidly, instead of slowly and gracefully, beat their wings in flurries and then sail for some distance on stiffly outstretched pinions over the surface of the waves. The Audubon Shearwater is sooty-black above, including the top of the head and the hind neck, and is white below, except for the dusky-brown under tail coverts and the dusky patches on each side of the breast. The rear edge of the tarsus and the outer edge of the outer toe are dusky, but the other parts of the tarsus and the toes are a vinaceous-pink. This species, which is less than twelve inches in length and has a wing expanse of less than twenty inches, is much the smallest of the three shearwaters now known to occur in the Gulf of Mexico. The Sooty Shearwater, in addition to being larger, is dusky above and below. The Greater Shearwater is almost equal in size to the Herring Gull, has the black cap distinct from the lighter-colored hind neck, and possesses a white ring around the base of the tail produced by the white upper and white under tail coverts.

The Storm Petrel Family: *Hydrobatidae*

WILSON PETREL. *Oceanites oceanicus.* Figs. 30, 32

Louisiana is noted for the attraction that it affords to a great host of migratory birds. Our winter visitors and our spring and fall transients are nearly all species of birds that nest to the north of us. Their migration is, therefore, a movement from breeding grounds in the North to wintering grounds in the South and then back northward again the following spring. We have however, one bird visitor, the Wilson Petrel, that comes to us from faraway

southern South America. It nests there in December and January, the equivalent in the Southern Hemisphere of our summer, and then it moves northward across the equator to spend part of *its* winter, May to August, in the Gulf of Mexico and over the waters of the north Atlantic. Its habit of skipping over the water on its long legs is the basis for its name "Peter bird" or petrel, an allusion to the disciple Peter, who walked on water. In the anecdotes of the sea, all petrels are often called "Mother Carey's chickens." As Robert Cushman Murphy, who is probably the world's authority on sea birds, points out: "The name of this vague demigoddess—no doubt the wife of Davy Jones, has been traced by some to prayers addressed by storm-tossed Mediterranean sailors to the Virgin, the *mater cara*, or 'dear mother.' "

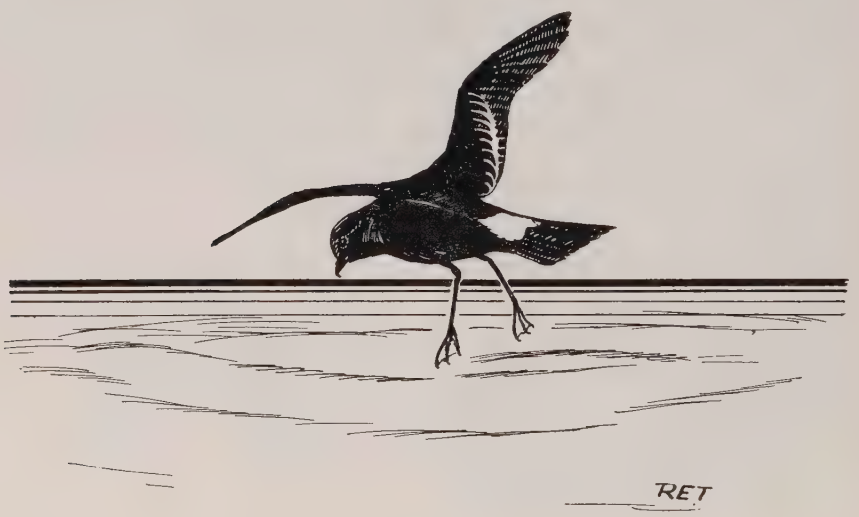


Fig. 32. Wilson Petrel.

Sportsmen and commercial fishermen frequently see small flocks of this species in the waters near the Chandeleur Islands, off the mouths of the Mississippi River, and offshore from Grand Isle; but not once, so far as we know, has it ever come to land on our shores. Extreme recorded dates for Louisiana waters are June 8 and July 26, but judging from observations elsewhere along the northern Gulf Coast the species might be expected to occur here both earlier and later than these dates.

The size of the Wilson Petrel is approximately that of the Purple Martin, which it somewhat resembles because of its black color and its long, pointed wings. At the base of its tail, however, it has a conspicuous white V-shaped patch. The legs appear disproportionately long and the toes are fully webbed.

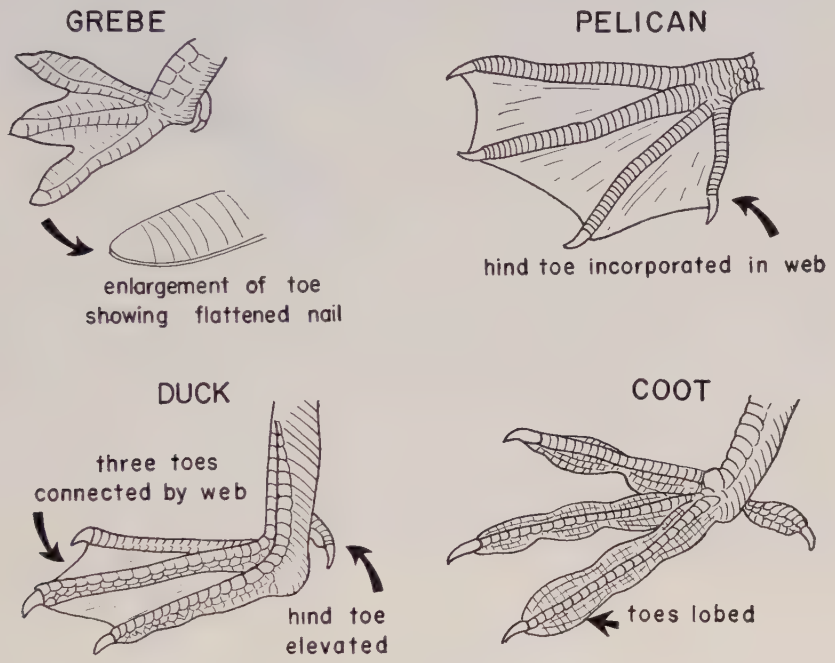


FIG. 33. Toes of some water birds.

PELICANLIKE BIRDS

Order *Pelecaniformes*

THE TROPICBIRDS, pelicans, boobies, cormorants, and the Gannet are all members of this order of birds. One of the many structural characteristics that they have in common is the full, or totipalmate, webbing of the toes, which incorporates even the fourth or hind toe (fig. 33). In other web-footed birds, the fourth toe is free of any connection with the three front toes and not infrequently articulates at a higher level on the foot than do the front toes. The members of this order are not aquatic, and the tropicbirds, boobies, and the Gannet are pelagic, usually coming to land only to nest.

[THE TROPICBIRD FAMILY: *Phaëthontidae*]

[YELLOW-BILLED TROPICBIRD. *PHAËTHON LEPTURUS.*]

This strikingly marked black and white bird, with its long streamer tail and yellow bill, is primarily a species of the open ocean. It breeds in the Bermudas and the West Indies and has been definitely recorded in the Gulf of Mexico on only eight occasions in the last 130 years. Thus vague reports by previous writers that its observance in Louisiana has been almost common in midsummer in some years seem certainly unfounded. Tropical hurricanes may occasionally carry a stray individual to our shores, but until there is a record for a specific date and a specific locality, this species has no real claim to a place on the Louisiana list.

The Pelican Family:

Pelecanidae

WHITE PELICAN. *Pelecanus erythrorhynchos.* Figs. 33, 34, 56

This immense white bird, with its black-tipped wings and long, yellow, pouched bill, is one of our most conspicuous winter residents. Although White Pelicans are not known to nest within our state, a few are often present along our coast throughout the summer. In late October and early November large migratory flocks are not uncommonly seen moving southward toward our coastal waterways, where the species is common in winter. Small flocks are also found on a few of the inland lakes in winter. Spring departure begins in April and continues through May. The principal breeding grounds for the White Pelican are lakes in western Canada and in the northwestern United States, but it has on occasions nested on the coast of Texas.

BROWN PELICAN. *Pelecanus occidentalis.* Fig. 34; p. 127

This is the official state bird of Louisiana. It is part of the State Seal and thus appears on all our official documents, along with the motto "Union, Justice, and Confidence." Although Louisiana is spoken of as the "Pelican State," this interesting bird is by no means confined to our borders. It ranges widely throughout the Gulf and Caribbean areas and along the Atlantic and Pacific coasts from South Carolina and California to Brazil and Ecuador. Unlike the preceding species, however, it seldoms strays far from salt water. Only twice in Louisiana, for instance, has it ranged as far inland as Baton Rouge, and one of these occasions was in August following a tropical hurricane.

The species is a common permanent resident in coastal Louisiana, nesting in large colonies on several of our inshore islands and on the mud lumps at the mouths of the Mississippi River. On East Timbalier Island I once found an aggregation of approximately 5,000 adults with their nests, eggs, and young.

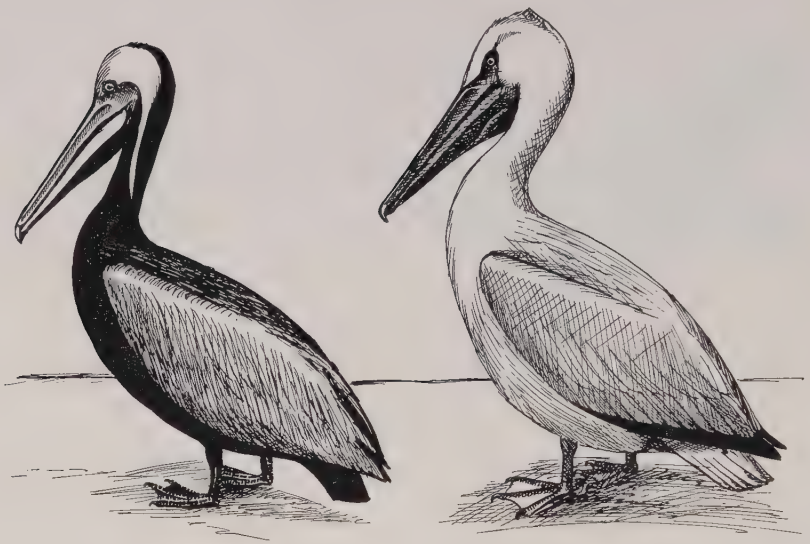


FIG. 34. Brown Pelican (left) and White Pelican (right).

Here the nests were built of sticks on the ground. On North Island, in Chandeleur Sound, in June, 1941, another large colony had most of the nests in low mangrove bushes. The pelican lays from one to three eggs, which are either whitish or dirty brown in color. The young on hatching are naked, homely-looking creatures but soon become covered with white down feathers. The adults feed their offspring by swallowing fish and then regurgitating partially digested portions back into the pouch. The baby pelican sticks its bill and head into its parent's pouch for its meal. The young grow slowly, and usually it is midsummer before they have completely lost their natal down, replaced it with contour feathers, and acquired their flight feathers. The fully-fledged young are mostly gray in color and quite unlike their parents in their breeding dress. The front and back of the long neck of the adults are a rich mahogany-brown and the top of the head and the sides of the neck are white. A few elongated feathers on the nape constitute some semblance of a nuptial crest.

Pelicans feed entirely on fish, almost wholly of noncommercial varieties. Turning in a half roll, they plunge bill first into the water and virtually disappear from sight in the resulting splash. The great pouch scoops up the prey

and in doing so naturally scoops up several quarts of water. But the bird throws its bill upward, and this contracts the pouch, squeezing the water out through the corners of the mouth. The fish is then swallowed in an awkward gulp.

Pelicans are indeed queer birds. Despite their many marvelous structural adaptations, they have lost all vocal powers. The only sound ever heard from a pelican is the hissing, snakelike noise that the young make when intruders come near their nest. I never fail to marvel at the almost unbelievable differences between a pelican and, let us say, a hummingbird, as they appear in the field. It is difficult to believe that two creatures so superficially diverse could have stemmed from a common ancestor, although we know from their internal similarities they did just that millions of years ago.

The Booby Family: *Sulidae*

BLUE-FACED BOOBY. *Sula dactylatra.* Pl. II

Boobies are relatives of the pelicans, which they outwardly resemble less than they do gulls. They are distinguished from the latter by their longer, thicker necks and their longer, more massive bills. The adult of this species, which is sometimes called the "Masked Booby," has a bluish-black bare area around the bill. The plumage is pure white except for the black tail and black-tipped wing feathers. (In flight the entire rear edge of the wing is black, not just the tip.) The black tail serves to distinguish it from the adult Gannet and the adult Red-footed Booby, both of which have white tails. The immature Blue-faced Booby is dusky-brown with a white belly. In this respect it resembles

the Brown or so-called White-bellied Booby; but the markings are much less sharply defined and the upper back has an indistinct whitish patch.

Although the boobies and the Gannet have been recorded only a few times in our state, they are doubtless sometimes present in numbers in offshore waters. Fishermen and sportsmen should be on the lookout for them. The two definite records for the present species are a bird found dead on July 28, 1929, at Grand Gosier Island, and another captured alive in the marsh near Gueydan on May 1, 1953.

BROWN BOOBY. *Sula leucogaster.* Pl. II

The white belly sharply demarcated from the rest of the plumage, which is solid dark brown, distinguishes this species from other boobies known to occur in Louisiana waters. The immatures are dark throughout and therefore resemble the much larger immature Gannets, but they are blacker and more uniformly colored above (lacking mottling) and have yellow (instead of blackish) feet. The species is often referred to as the "White-bellied Booby." There are single records of the Brown Booby for the state in the months of January, April, and September. Two specimens were collected by George E. Beyer in September, 1884, approximately fifty miles below New Orleans; three were seen at Red Pass, near the mouth of the Mississippi River, on January 15, 1901; and a specimen was obtained in April, 1929, at Grand Isle by E. S. Hopkins.

RED-FOOTED BOOBY. *Sula sula.* Pl. II

A single immature specimen of this species taken at the mouth of Bayou Scofield on November 1, 1940, and now preserved in the Louisiana State University Museum of Zoology, is the only state record and, as a matter of fact, one of the few unquestionable records in the United States. The immature is usually a light brown throughout and cannot be readily distinguished in the field from the immature Brown Booby. The adult Red-footed Booby has red

Explanation of *Plate II*

The Gannet and the Boobies

1. adult Gannet (p. 117); **1a.** immature. **2.** adult Blue-faced Booby (p. 115); **2a.** immature from above; **2b.** immature from below. **3.** adult Red-footed Booby (p. 116); **3a.** immature from above; **3b.** immature from below. **4.** adult Brown Booby (p. 116) from above; **4a.** adult from below; **4b.** immature from above; **4c.** immature from below.

1
1a
2
2a
2b
3
3a
3b
4
4a
4b
4c

feet and is otherwise all white except for the black-tipped wing feathers. The black extends along the entire rear part of the wing, a point that serves to distinguish it from the Blue-faced Booby, which also differs in having a black-tipped tail. The adult Red-footed Booby is similar to the adult Gannet in having the tail white and only the tips of the wings black, but as the smallest of the boobies it is strikingly inferior in size to the Gannet. The size ratio of the boobies to each other and to the Gannet is indicated in Plate II.

GANNET. *Morus bassanus.* Pl. II

The Gannet is the largest member of the booby family; in fact, it is nearly the size of a Brown Pelican. It is also the most common member of its family in northern Gulf waters, but despite this fact, the one definite record for the state is a specimen shot on December 9, 1886, at the Rigolets, where the species is said to have occurred on several other occasions. It must be remembered, however, that boobies and the Gannet are highly pelagic and do not often come close to land except in their nesting season. The boobies are generally birds of tropical seas, but the Gannet breeds at northern latitudes—for example, on the islands in the Gulf of St. Lawrence. In winter they move southward along the Atlantic Coast, and quite a few enter the Gulf of Mexico, arriving in northern Gulf waters as early as November 22 and remaining as late as May 14. Whether they cross the peninsula of Florida or come all the way around its tip in order to reach the Gulf is not known. When I crossed the Gulf in May, 1945, and again in April, 1948, I saw Gannets at various points between the mouth of the Mississippi River and Yucatán. Also, the species is observed regularly in winter at Pensacola Beach, where counts have run as high as 51 in a forty-five-minute period.

Their large size and the manner in which they wheel in circles over the ocean waves make Gannets recognizable at once. They differ radically from gulls, even the large Herring Gull, in that the neck is much longer and the large bill is usually slanted downward toward the water. The tail is pointed, not fan-shaped. As Roger T. Peterson says, this gives them a "pointed-at-both-ends look." Like their relatives the pelicans, they hit the water with a great, spectacular splash; gulls rarely hit the water but instead pick food from the surface as they hover momentarily. Adult Gannets are white with black wing tips (see also Blue-faced and Red-footed Boobies); but immatures, which outnumber adults in the Gulf, are brownish gray, flecked with white. Subadults are mottled above with black and white.

The Cormorant Family:

Phalacrocoracidae

DOUBLE-CRESTED CORMORANT. *Phalacrocorax auritus.* Figs. 35, 36

Often called "nigger goose" or "water-turkey," this is one of the commonest water birds of the state and, therefore, needs little introduction except by its proper name, Double-crested Cormorant. "Water-turkey" is a particularly unfortunate name, since it is often used for another species. Because of their fish-eating habits, cormorants enjoy no favor from sportsmen, and they are often shot in numbers. Killing them, however, is unjustified, for they eat very few game fish. If the truth be known, their fish-eating habits render them beneficial to sportsmen; for actually they eliminate many predatory fish that would otherwise consume great quantities of small fry of perch and bass and other desirable species.

Double-crested Cormorants are most common in Louisiana in winter and early spring. Although a few are known to breed within the state, usually in deep, remote swamps, the vast majority leave here in April to migrate far northward to nest, returning in early September. The nests are in colonies and are generally placed on horizontal limbs over the water at various heights and are constructed of sticks and twigs. The three eggs are laid in April or May and are very pale blue or bluish white, the color being more or less concealed by a chalky white covering.

The plumage of adults is entirely black with much iridescence at all seasons. Young birds, less than a year old, are light tan or brownish-white below and on the neck. On the water, cormorants can be, and often are, mistaken for loons or for the Anhinga. Loons, however, are white below and hold the neck hunched down on the shoulders, while cormorants are

never pure white below and always hold the neck and head high. Moreover, the bill of the cormorant is held at a conspicuously upward tilt, decidedly more so even than that of the Red-throated Loon. Cormorants dive and swim with agility, but, like grebes and loons, they often experience "take off" difficulties. In flight they resemble geese, both in size and in their manner of flying in long lines or V-formations. These similarities and their black color are the basis for the name "nigger goose." Cormorants frequently perch in dead trees on our lake shores and are often seen with their wings spread as they dry themselves.

FIG. 35. Heads of Double-crested Cormorant (top) and Olivaceous Cormorant (bottom).

OLIVACEOUS CORMORANT. *PHALACROCORAX OLIVACEUS.* Figs. 35, 36

This is a species whose range lies almost wholly to the south of us, extending all the way to the southern tip of South America. It barely enters the borders of our state. Our only positive records are from southwestern

Louisiana where it is a fairly common permanent resident, breeding locally in Cameron Parish. The four or five bluish-white eggs are laid in late May on a stoutly constructed platform of sticks in bushes over open water.

The body of this species is about half as large in bulk as that of a Double-crested Cormorant, and in the breeding season the throat pouch is bordered by a narrow edging of white feathers. In adult winter plumage the Olivaceous Cormorant is more solid brownish black, especially on the neck, than is its larger relative. Immatures of the two species in the first winter plumage are indistinguishable from each other in the field except by size.

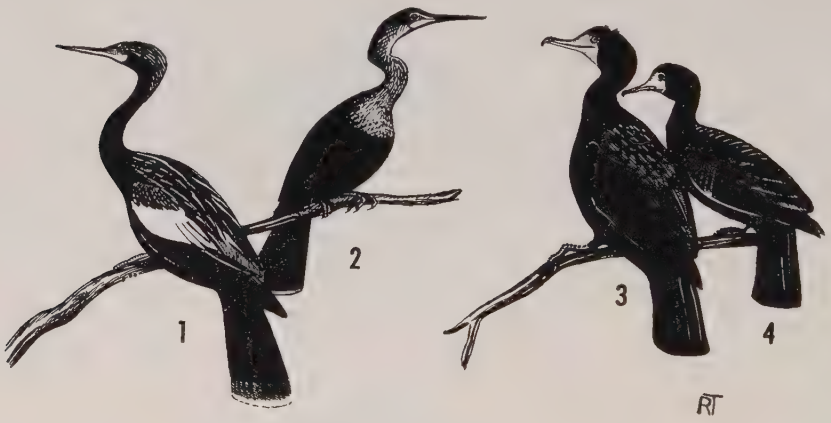


FIG. 36. Adult summer plumages of the Anhinga and the cormorants: (1) male Anhinga; (2) female Anhinga; (3) Double-crested Cormorant; (4) Olivaceous Cormorant.

The Darter Family:

Anhingidae

ANHINGA. *Anhinga anhinga.* Fig. 36

The Anhinga, also known as the "water-turkey" or "snake-bird," is one of our most grotesque birds. It swims with the entire body submerged and only the long, black, snaky head and neck exposed—thus its name "snake-bird." Although somewhat similar to a cormorant, it differs in having a slimmer neck, a much longer tail (as long as the body rather than decidedly shorter than the body), and a pointed instead of a hooked bill. Adults have a great amount of white in the wings, the back is flecked and streaked with silvery white, and the tip of the tail is buffy white. Adult males are otherwise black, except for a few short brownish-and-white nuptial plumes that appear on the sides of the head and neck in the breeding season. Females have a brown throat, neck, and upper breast with a sharp line of demarcation at the junction with the otherwise blackish under parts. The young, less than a year old, show even more brown than the female. On the wing, the Anhinga is one of the most arresting sights of our swamplands; it flies with the neck outstretched and the tail spread fanlike, sailing with rapid intermittent strokes of the wings or soaring on rising air currents, sometimes to considerable heights. It is rare in winter but very common in summer, being especially numerous as a nesting bird around the swamp lakes of northern Louisiana. The bulk of the population disappears by the end of October and reappears in March or early April. The nest is built of sticks, usually on the low limb of a cypress and usually over water. The three to five bluish-white eggs are laid in the period from April through June. The young on hatching are naked and quite reptilelike in appearance.

The Frigatebird Family: *Fregatidae*

MAGNIFICENT FRIGATEBIRD. *Fregata magnificens.* Fig. 37

These majestic birds of the ocean are rarely seen on the Louisiana mainland except along the coast, and then usually only after storms of strong or hurricane force. Following the tropical storm of August 6, 1939, Magnificent Frigatebirds, or "Man-o'-war-birds," as they are often called, appeared over the lakes in the city of Baton Rouge and at various places along the Mississippi River as far north as Natchez, Mississippi. Extreme dates of authenticated occurrence in the state are March 25 and November 6. These dates would suggest that the species breeds here, but that is not the case insofar as is known. Nesting takes place from the Bahamas and the Caribbean area as far south as northern South America and the Galápagos Islands, from which places the birds apparently leave in numbers as soon as the young can fly. In early June it is not unusual to see five to ten thousand of these birds in the air at once in the vicinity of Chandeleur and Breton Sounds, just east of New Orleans and the delta of the Mississippi River. The vast majority of the individuals in these large aggregations are young of the year, as evidenced by their white heads and extensively white under parts.

Frigatebirds, adults and immatures alike, are readily identified by their eight-foot wingspread and their long tails, which are forked to a depth of eighteen inches. Adult males are black with green iridescence, except for the featherless throat, which is red in the breeding season and expanded balloonlike

beneath the bill as part of the mating behavior. Adult females have white chests, but the black head and belly distinguish them from immatures.

Frigatebirds, despite their large size, are as agile on the wing as swallows and are expert fishermen. They dive from great heights to pluck their prey from the water with their hooked bills, without wetting a feather in the process. Often, however, they dine on stolen fish that they intimidate gulls into dropping or disgorging.

FIG. 37. Magnificent Frigatebird: (1) adult male; (2) immature; (3) adult female.

HERONLIKE BIRDS

Order *Ciconiiformes*

The Heron Family: *Ardeidae*

Herons, in Louisiana and in many other places, are often incorrectly called "cranes." They differ anatomically from cranes in many ways, and they are confused only because both have long legs and a long neck. Herons fly with their necks pulled back on their shoulders in S-shaped fashion; cranes fly with their necks completely outstretched. Also, cranes are very rare in Louisiana; in the many years that I have searched for and studied birds in this state, I have yet to see here a single crane.

Included in the heron family are the egrets, which were once virtually exterminated by plume hunters seeking feathers primarily for women's hats. Since the plumes are at their finest in the nesting season, the birds were killed mostly at that time. This persecution not only decimated the ranks of the adults but also left eggs unhatched and young to die in the nest. So completely was reproduction disrupted that the birds were soon on the brink of total extirpation. The passage in 1909 of the Lacey Act ended traffic in plumes in the United States and forbade their importation from countries south of our border. The "aigrettes," as the nuptial plumes are called, are special lacelike feathers, situated mainly on the back, lower neck, and head. In the Snowy Egret those of the back are recurved, while in the American Egret they are long and straight. All herons acquire nuptial plumes, but it is mainly the egrets that possess the filamentous, lacy feathers that, in courtship and at the nest, are raised in a spectacular display of finery (see page 130).

Most herons nest in colonies that number from a few pairs to thousands of individuals, depending on the species. The nests are generally rather large platform structures of sticks and twigs in bushes or in trees, often over water in some remote swamp. The pale bluish or greenish eggs are usually laid in

April or May and require several weeks of incubation. Newly-hatched herons are scantily covered with long down feathers and are quite helpless. The parents feed them by a curious method of regurgitation whereby the young bird grasps the bill of the adult crosswise. Then, by a rather comical pumping motion, the adult injects partially predigested food into the throat of the offspring. Those who admire the quaint attractiveness of baby herons and aspire to raise one by hand should be fully apprised of this special feeding technique, which will be required of them as foster parents.

Adult herons are usually slow and deliberate in their movements. They stalk quietly along the shallows or stand motionless on the edge of a lake or marsh. But suddenly a long neck will dart out and a bird will grab an unsuspecting minnow, frog, or crayfish in its heavy, pointed bill.

Much of Louisiana affords ideal habitat for herons, and consequently they have again become locally common or even sometimes abundant. The world-famous "Bird City" established by the renowned Louisiana conservationist, the late Edward A. McIlhenny of Avery Island, is now an immense colony of thousands of egrets and herons that nest on man-made platforms in an artificially created pond of several acres' extent. McIlhenny's efforts in behalf of this bird were largely responsible for its survival.

One of the most interesting behavior patterns of herons is the extensive post-breeding wandering that carries individuals of some species far north of their actual nesting range. The Snowy Egret, for example, has appeared in late summer in faraway Ontario, and the Little Blue Heron has been observed in Nova Scotia—both places hundreds of miles north of the northernmost breeding colonies.

GREAT BLUE HERON. *ARDEA HERODIAS.* Pl. III

This bird competes with its white counterpart, the Great White Heron of southern Florida, for the distinction of being the largest member of the heron family occurring in North America. It stands about four feet high when the head is raised. Size alone distinguishes it from other herons whose body color is not white. Moreover, the top of the head and the throat are white in adult Great Blue Herons, while these parts are dark in other dark-colored herons. The call notes are a series of low, hoarse croaks that have been described as *frahnk, frahnk, frahnk.*

The species is state-wide in distribution and a permanent resident that is seen regularly in small numbers. In winter, local populations in the southern part of the state are supplemented by visitors from the north.

AMERICAN EGRET. *Casmerodius albus.* Pl. III; fig. 56; pp. 128, 129

This large all-white heron is approximately half as large in bulk as the preceding species, but its long legs and neck give it nearly comparable stature. It can be confused only with the much smaller Snowy Egret and the immature Little Blue Heron, both of which are also white; but the legs and feet, including the toes, of the American Egret are black and the bill is rich yellow. The adult Snowy Egret has black legs and feet except for the *yellow toes.* (Remember that the first joint above the ground in a bird's hind limb is its heel; a bird stands on its toes only.) The bill of the Snowy Egret is black, and only the area called the lores is yellow. The immature Little Blue Heron has greenish-yellow legs and toes, and the tips of the primary flight feathers are tinged with dusky. The American Egret is a permanent resident in southern Louisiana, moderately common in winter and abundant in summer. In mild winters a few individuals remain in the northern part of the state, but ordinarily at that season the bird is found principally in the coastal parishes. When the winter is severe, very few American Egrets remain even there.

SNOWY EGRET. *Leucophoyx thula.* Pl. III; p. 130, 131

The Snowy Egret's immaculate-white attire, with its adornment of delicate lacelike plumes, which it displays at the nest, combines with its graceful form to make it one of the loveliest of all birds. It breeds commonly throughout the state, but the largest colonies, those comprising thousands of individuals, are in southern Louisiana. The species remains in small numbers in the coastal marshes through the winter, but elsewhere in the state it is extremely rare or absent from November to mid-March. It is about one-half the size of the American Egret and, like it, has black legs and tarsi. But the toes of the Snowy Egret are yellow instead of black. It also resembles the immature Little Blue Heron, which is all-white except for the dusky-tipped primaries; the legs and feet of the Little Blue are greenish yellow.

An exotic species that may be confused with the Snowy Egret is the Cattle Egret (*Bubulcus ibis*) of the Old World. There is evidence that the latter appeared in Florida as early as 1942 (presumably from northern South America, where it seemingly arrived a few years earlier) and is now making a phenomenal spread through the eastern United States. Although it has not yet been reported from Louisiana, its early occurrence is to be anticipated. A brief statement here of the bird's characters, which are described in very few North American bird books, may possibly expedite its discovery in the state.

Brown Pelican Rookery ALLAN D. CRUICKSHANK

"A Wonderful Bird Is the Pelican. . ." ALLAN D. CRUICKSHANK

American Egret—A Precision Landing

ALLAN D. CRUICKSHANK

American Egret Stalking Minnows ALLAN D. CRUICKSHANK

Snowy Egret in Nuptial Strut SAMUEL A. GRIMES

Snowy Egret Going Places ALLAN D. CRUICKSHANK

Cattle Egrets at Nest in Florida SAMUEL A. GRIMES

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The Cattle Egret Is Well Named SAMUEL A. GRIMES

Yellow-crowned Night Heron, Its Reflection, And Its Shadow

ALLAN D. CRUICKSHANK

"Gourdhead," or Wood Ibis ALLAN D. CRUICKSHANK

White Ibis—A Study in Graceful Beauty ALLAN D. CRUICKSHANK

White Ibis Wading Up to the "Hilt" ALLAN D. CRUICKSHANK

White-faced Ibis on Platform Nest ALLAN D. CRUICKSHANK

Roseate Spoonbill, the "Flame Bird" SAMUEL A. GRIMES

The adult Cattle Egret (see photographs on page 132) resembles in size and color the Snowy Egret and the immature Little Blue Heron, although in some plumages the top of the head and back and a small patch of feathers on the lower neck are buffy instead of immaculate-white. It is somewhat stockier, stands more erect, and the bill is stout, short, and yellow or yellow-orange in color. The legs are dark in winter but become greenish yellow in spring, tending toward reddish at the height of the breeding season. The behavior of the bird, however, usually provides the first clue to its identity. As the name suggests, it is generally found in pastures in the company of cattle, feeding on insects that are stirred up or that it pecks from the bodies of the cows themselves. Every now and then a bird will stop and indulge in a most peculiar antic. A waving motion begins in the head and neck and seems to travel ribbonlike down to and through the body. After indulging in this action several times, the bird proceeds in its search for food. The Cattle Egret is said to alight sometimes on the backs of cattle, but Snowy Egrets also do this. Indeed, the presence of an egret in the vicinity of cattle should not be taken as absolute evidence that the bird is a Cattle Egret, for both Snowy Egrets and Little Blue Herons are seen often in such situations. But all such birds should be carefully scrutinized if Cattle Egrets are not to escape detection.

REDDISH EGRET. *Dichromanassa rufescens.* Pl. III

This is an uncommon visitor to Louisiana that is known only from the coastal areas of the state, where it occurs particularly in late summer. Although there are no nesting records for the species in Louisiana, it breeds commonly on the coast of Texas.

The fully adult Reddish Egret resembles the adult Little Blue Heron but is noticeably larger and more bulky and is lighter throughout in color, with the neck reddish-tan instead of dark purplish. Also, in summer adults the basal half of the bill is flesh-colored, instead of black, a character that does not hold for immatures. The Reddish Egret is decidedly more lively in its movements than either the Little Blue Heron or the Snowy Egret. While feeding in shallow ponds or at the edge of the surf on the Gulf shore, it darts first one way and then another, grabbing the small fish that comprise the bulk of its food.

Immatures are ashy gray, everywhere more or less suffused with rufous shades, fawn color, or various vinaceous tints, which may not always be visible in the field at a distance. The bill in these birds is uniformly dusky, and the legs and feet are dark greenish black. The full adult breeding plumage (in

which the body is uniformly gray and the reddish feathers on the head and neck become long and scraggly) and the flesh-colored basal portion to the bill are not acquired until the second prenuptial molt following the bird's second winter. An all-white color phase occurs rarely in Texas colonies and frequently in West Indian populations. In this phase the bird's larger size and dark, instead of yellow, toes serve, among other things, to distinguish it easily from the Snowy Egret.

LOUISIANA HERON. *Hydranassa tricolor.* Frontispiece; Pl. III

This and the following species occur together in winter and during migration in our coastal marshes, but when the breeding season comes they segregate ecologically. The Louisiana Heron remains as a bird of the tidal marshes along the coast, where it nests commonly in mangrove thickets; the Little Blue Heron becomes entirely a bird of fresh-water ponds, lakes, and river banks. The abundance of the Louisiana Heron in winter varies from year to year. One-day counts in the last week of December and the first week of January in Cameron Parish, one of the most favorable habitats of the species in the state, have ranged from one to as many as 44 individuals. By early March the marshes are again studded with Louisiana Herons and remain so until the following November.

The dark-colored upper parts and contrasting white belly identify the present species at a glance. Also, it is somewhat larger than either the Little Blue Heron or the Snowy Egret. In summer when the nesting season is over, Louisiana Herons occasionally desert the coastal, brackish-water marshes and wander northward over the state. At Baton Rouge, for instance, they have occurred from late April to November, with the greatest frequency from June to September.

Explanation of *Plate III*

Herons and Their Allies

1. Great Blue Heron (p. 125). **2.** immature Little Blue Heron (p. 139). **3.** adult Little Blue Heron (p. 139). **4.** American Egret (p. 126). **5.** Reddish Egret (p. 137). 6. Snowy Egret (p. 126). **7.** Louisiana Heron (p. 138). **8.** Green Heron (p. 139). **9.** Black-crowned Night Heron (p. 139), adult in front, immature behind. **10.** American Bittern (p. 140). **11.** Least Bittern (p. 141). **12.** adult Yellow-crowned Night Heron (p. 140).

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LITTLE BLUE HERON. *Florida caerulea.* Pl. III

The adult of this common species appears at a distance to be a solid dark blue color. At close range, however, the neck is found to be very dark vinaceous-purple. The legs, feet, and tip of the bill are black. Immature individuals are all-white except for the tips of the main flight feathers, which are dusky. They have greenish-yellow legs, and this immediately distinguishes them from the similarly white Snowy Egret, which has black legs.

A few Little Blue Herons winter in the coastal marshes, but the vast majority of them leave for Central America in October. In spring they migrate mainly up the coast of Mexico and Texas and by mid-March are again on their nesting grounds throughout the interior of Louisiana.

The so-called "calico bird" or "spotted crane" is the immature Little Blue Heron in the process of losing its white plumage and acquiring the blue. Hence it has a mixture of feathers of both colors. The first spring molt of immature birds takes place in the winter home, prior to migration, for by the time they return to the United States nearly all one-year-olds have the adult plumage and cannot be distinguished from full adults.

GREEN HERON. *Butorides virescens.* Pl. III

This small, greenish-backed heron with its chestnut-colored neck and orange legs and feet is well known to nearly every sportsman and schoolboy of this state, although generally by one of its more colloquial names, such as "kop-kop," "shipoke," or "fly-up-the-creek." In the air it somewhat resembles a crow, but its wings have a more arched form in flight, and, of course, its body shape is radically different. Its call is an explosive *kop-kop*, or a *sky-ow, sky-ow.*

The Green Heron sometimes nests in small colonies, in a slough or over a small pond, but frequently single pairs are found. It is rare or absent in Louisiana after mid-November, even in the coastal marshes, but by the third week of March it can be found again throughout the state.

BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax.* Pl. III

Night herons are distinguished from other herons by their thick, heavy bills (hence the name of *gros-bec* among Louisiana's French-speaking people). Adults of this and the following species are distinctively marked (see next account) and present no difficulty in identification when seen in good light;

but unfortunately, as the name implies, night herons are not often seen in good light. They usually leave their daytime roost just at sunset and hence are generally observed as silhouettes. Even under these adverse conditions, however, there are two excellent field characteristics that separate the Black-crown from the Yellow-crown: in flight only the toes of the Black-crown extend beyond the tail and the call is a coarse *quark*, while in the case of the Yellow-crown part of the tarsus also protrudes clear of the tail and the call is a *quak*. Immature night herons resemble the American Bittern but are a grayish brown in color instead of a rich, yellowish brown. The Black-crowned Night Heron is a permanent resident throughout the state in suitable situations, quite common in summer but scarcer in winter.

YELLOW-CROWNED NIGHT HERON. Pl. III; p. 133

Nyctanassa violacea.

The adult of this species is gray except for the black head with its white cheeks and creamy-white crown. The preceding species is black-backed with the under parts white and with the neck and head gray except for the black crown. Immatures of both species, in their grayish, drab, and streaked plumage, cannot be distinguished with certainty other than on the basis of call notes and the degree to which the feet extend beyond the end of the tail as noted in the previous account.

The Yellow-crowned Night Heron is a permanent resident, fairly common in summer but uncommon in winter, when its occurrence seems to be limited to the extreme southern parts of the state. Migrants leave early in September and begin to return by early March.

AMERICAN BITTERN. *Botaurus lentiginosus.* Pl. III

Bitterns, although members of the heron tribe, are greatly different from herons in many regards, particularly in their actions and behavior patterns. They are entirely marsh dwellers and are extremely secretive in their habits. Most often they are seen on the edges of mud flats in the marsh, or on the edges of canal banks. At the slightest alarm they "freeze" and point the bill upward. The alternating brownish and yellowish vertical streaks on the breast and throat align with the yellowish bill. The bird as a whole, even to the yellow eyes, becomes part of its mosaic background of marsh grasses, blending perfectly with it and becoming almost invisible. This habit of pointing the

bill skyward earns for the bittern the name "sun-gazer" and provides one of the most striking examples of a behavior pattern associated with a device of protective coloration. That the bird instinctively "knows" that its upturned bill and vertically streaked breast blend with the grasses behind it is shown by the fact that, as the observer circles to one side or the other, the bittern slowly turns so as to keep its breast in sight. The voice of the American Bittern resembles the sound of an old-fashioned water pump being primed or that of a stake being driven into mud by a wooden mallet.

The species breeds locally in small numbers in cattail marshes throughout the state, where it is a permanent resident, even though there is yet no record of it for the month of July. From October to May, however, as a result of the influx of migrants from the north, the species becomes quite numerous in the coastal marshes. The four or five buffy unmarked eggs are laid on a platform of rushes, cattails, and grasses built in a wet situation, usually at least a few inches above the ground.

LEAST BITTERN. *Ixobrychus exilis.* Pl. III

This diminutive bittern, which is similar to a meadowlark in body bulk though not in shape, stands out from all other herons because of its very small size and buffy-colored wing patches, which contrast with its black back. Although resembling in general habits its larger relative the American Bittern, it does not remain the year around in this state. All but an occasional individual leave here in early fall and do not reappear in our marshes until early March. It is a common summer resident in cattail marshes throughout Louisiana. The nest is suspended between stalks of marsh plants and is a woven mass of vegetation, sometimes containing twigs. The eggs are four or five in number and bluish-white in color.

The Stork Family:

Ciconiidae

WOOD IBIS. *Mycteria americana.* Pl. IV; fig. 56; p. 134

Although called the "Wood Ibis," the present species is not an ibis at all but is instead a true stork. Its relatives in Europe commonly build their nests on roof tops of human dwellings and are, therefore, among the best known of all birds. The body of the Wood Ibis is white, the wing and tail feathers are glossy black, the legs are long, and the black skin of the head is featherless. The last-named character is the basis for the vernacular name "gourdhead," by which the species is commonly known in this state.

The Wood Ibis is said to have bred in southern Louisiana as late as 1918, but now there are no known nesting rookeries even though it is fairly common to common throughout the state in summer. I strongly suspect, however, that it may breed in the vast, almost impenetrable, lower Atchafalaya River swamp, which is still for the most part an unexplored area ornithologically. In the state as a whole it has been recorded nearly every month of the year, but at Baton Rouge its occurrence has been limited to March and April and to late summer. In late summer flocks are rather frequently observed in nearly all heavily wooded swamp areas of the state, although actual numbers vary appreciably from year to year, probably in accordance with fluctuations in water levels. In the summer of 1953, when swamps in Arkansas were largely dry as a result of drought, Wood Ibises became unusually abundant in some sections of southern Louisiana, as, for example, on the Rockefeller Refuge in Cameron Parish. There on August 2 and 3, Fred Webert estimated the Wood Ibis concentration on the refuge at a "highly conservative" 50,000 individuals.

The Ibis Family:
Threskiornithidae

This family includes the ibises and spoonbills, all of which are long-legged, long-necked wading birds. In the former the bill is down-curved; in the latter, as the name implies, it is flattened and spoon-shaped. These characters serve to distinguish members of this family from herons and heronlike birds. They fly with their necks outstretched, not with their necks hunched back on the shoulders, S-shaped, in the manner of herons. Also, the flight of ibises is quite unlike that of herons. The former beat their wings much more rapidly and glide at frequent intervals, alternately flapping and sailing.

GLOSSY IBIS. *Plegadis falcinellus.* Pl. IV

This is an exceedingly rare bird in the state. The few authentic records of its occurrence are in summer and late fall. These may be wandering individuals from farther east, presumably from Florida, where the species is common. The Glossy Ibis is almost identical with the White-faced Ibis in size and color but lacks the rim of white feathers around the base of the bill and in the immature and winter plumages is somewhat darker. Since the White-faced Ibis itself lacks the white face in fall, winter, and early spring, really satisfactory field identification of these two species cannot be made except in the breeding season.

WHITE-FACED IBIS. *Plegadis mexicana.* Pl. IV; p. 136

In the rice fields and coastal marshes of southwestern Louisiana it is common to see flocks of these birds probing their long, curved bills into the water and mud for their food. At a distance they appear entirely black. At close range, however, the coloration of breeding adults in spring and early summer

is seen to be a rich maroon intermixed with highly iridescent purple and green, and the feathers of the face, from the base of the bill to the rear of the eye, to be white. From this latter fact the bird derives its name. The legs and the skin at the base of the bill are purplish but appear black at a distance. In winter White-faced Ibises are dark iridescent green, except for the brownish head and neck, which are minutely streaked; they lack the purplish coloration and white face. Only with great difficulty can this and the preceding species be distinguished when in winter dress, although the Glossy Ibis is slightly darker in appearance.

The White-faced Ibis is so strictly a bird of extreme southwestern Louisiana that it is seldom seen north of the vicinity of Lake Charles and east of Vermilion Bay. One of the largest rookeries is located at a place called "The Burn," in the deep marsh a few miles north of Little Chenier in Cameron Parish. In some by-gone year of great drought, marsh fires burned deep into the peat soil in this area, forming a depression that later became a pond surrounded by low bushes and a few willow trees. The area is now the nesting site for several thousands of these birds. They have occupied the area in the breeding season at least since 1928, and the ibises that do not migrate farther south along the Gulf Coast use it as a year-round roost. The nests of sticks and rushes are placed in low bushes in the marsh and the three to four eggs are pale green in color.

Explanation of *Plate IV*

Adult Ibises, the Flamingo, and the Spoonbill

1. Glossy Ibis (p. 143) in breeding plumage. **2.** White-faced Ibis (p. 143) in breeding plumage. **3.** White Ibis (p. 145). **4.** Roseate Spoonbill (p. 146). **5.** American Flamingo (p. 147). **6.** Wood Ibis (p. 142). **7.** Scarlet Ibis (p. 145).

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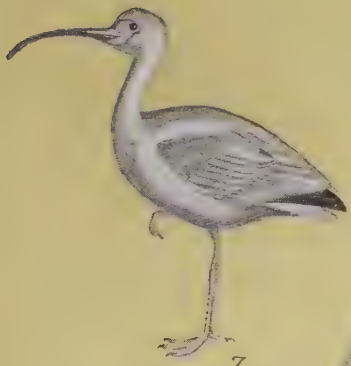

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WHITE IBIS. *Eudocimus albus.* Pl. IV; fig. 56; p. 135

The White Ibis is a permanent resident in the southern half of Louisiana, most abundant from the middle of March to the end of September. In late summer, however, individuals wander northward over the state, even as far as Shreveport. White Ibises occur in fresh-water swamps much more frequently than their relatives and there build their nests of sticks and twigs and lay their four greenish- or creamy-white eggs. An immense rookery of thousands of nesting pairs of these birds is located in a wooded swamp lying near Pass Manchac between Lakes Pontchartrain and Maurepas. In 1941 another large rookery was discovered in an almost inaccessible swamp a few miles from Thibodaux. Individuals from these great rookeries fan out in all directions, sometimes for considerable distances, in their daily search for food. In some years hundreds of White Ibises can be seen passing over the city of Baton Rouge each afternoon in early summer, flying in the direction of the Pass Manchac colony. In other years the afternoon flights pass south of the city, probably depending on where the favorable feeding places are located. In any event, many of the birds must travel daily well over fifty miles from their homes.

The White Ibis is all-white in color, except for its black-tipped wings and its reddish-orange legs, bill, and facial mask. The immature is a dirty white with brownish wings and a conspicuous white tail. As is true of all ibises, this species flies with its neck outstretched and alternately flaps its wings rapidly and sails.

SCARLET IBIS. *Eudocimus ruber.* Pl. IV

John James Audubon claims to have seen three of these spectacular birds at Bayou Sara, near St. Francisville, on July 3, 1821. Since then the Scarlet Ibis has been observed only three times within the borders of the United States—once each in Texas, Florida, and New Mexico. Indeed, it occurs only casually in the West Indies and Central America, its center of distribution being in tropical South America. The plumage of the species is entirely scarlet except for the black-tipped wing feathers.

ROSEATE SPOONBILL. *Ajaia ajaja* Pl. IV; p. 136

Spoonbills, which are also called "flame birds" or "pink curlews," are almost incredible birds. Their pink-and-white general color, highlighted by areas of vivid blood-red on the breast, wings, and lower belly; their long legs; and the spoon-shaped bill, which is over six inches in length, give them a spectacular appearance. At one time these magnificent creatures lent their beauty to much of Louisiana's marshland, but now only a dozen or so occasionally breed in the extreme southwestern part of the state. One site recently occupied is Shell Hill, a hummock in the marsh on the Sabine National Wildlife Refuge, where a few Roseate Spoonbills share a rookery with Olivaceous Cormorants, Anhingas, and various species of herons. The spoonbill's three dull white eggs streaked with brown are laid in a well-built nest of sticks lined with dead leaves and bark.

From time to time, during the nonbreeding season, one or two individuals appear outside of Cameron Parish, and fortunate indeed is the person who chances to be on hand to see them. There are records for the state in every month of the year except January and February. Activities of such great conservation agencies as the National Audubon Society have done much to restore this fine bird, following its virtual extinction at the hands of plume hunters. Texas and Florida alike now support sizable breeding colonies, and, in time, those of Louisiana may flourish again.

The Flamingo Family: *Phoenicopteridae*

Specialists are not in complete agreement on the taxonomic position of the flamingos. The birds possess a bizarre combination of characters—part heronlike and part swanlike. Indeed, they are so much like the latter that some experts would prefer to treat them as members of the Anseriformes, which in-

cludes the swans, geese, and ducks. Flamingos, like the swans and their allies, possess webbed feet, lamellate bills, and elevated hind toes. The newly-hatched flamingo is heavily covered with down and is very cygnetlike in appearance. Adult flamingos are frequently seen to alight on deep open water and to swim swan-fashion with the neck in a graceful loop. In the vicinity of their nesting rookeries they utter low, conversational notes that are strongly reminiscent of the noises made by a flock of Blue and Snow Geese in the process of feeding or roosting at night on a prairie marsh. But, despite all of these anserine features, the flamingos resemble the herons and ibises in certain anatomical respects and in the manner of their feather molt. Consequently, Dr. Alexander Wetmore, in drawing up his classification of the orders and families of the birds of the world, an arrangement almost universally followed by ornithologists, placed the flamingos in a separate suborder at the end of the Ciconiiformes and just before the Anseriformes.

AMERICAN FLAMINGO. *Phoenicopterus ruber.* Pl. IV

This large, grotesque, pink bird has been definitely recorded only once within the state. W. L. McAtee, the great authority on the food habits of North American birds, saw a single individual on December 6, 1910, in Cameron Parish. The species has appeared on the coast of Texas on several occasions, and for this reason it might be expected to recur in Louisiana. A large colony of several thousand flamingos is said to breed in Yucatán, just across the Gulf of Mexico from Louisiana. An occasional stray individual could wander northward or be driven here by hurricanes that sweep up from that direction. Although the flamingo and Roseate Spoonbill are both pinkish in color, there is no reason for confusing them. As the accompanying illustrations show, the two are radically different in form. Only first-hand or carefully authenticated records, however, are acceptable, since the Roseate Spoonbill is sometimes erroneously called "flamingo."

DUCKLIKE BIRDS

Order *Anseriformes*

The Duck Family:

Anatidae

This family of birds in North America comprises, according to specialists, seven subfamilies—the swans, geese, treeducks, dabbling ducks, diving ducks, ruddy and masked ducks, and, finally, the mergansers. Each has much in common with all the rest, as is evident from the fact that all belong to the same family, but each is likewise different in one or more notable structural characteristics. For instance, the treeducks, among other things, are long legged; the mergansers have serrated, or sawlike, edges to the bill; the diving ducks possess a prominent, fleshy lobe on the hind toe that the dabbling ducks lack, as well as numerous other distinctions. For the most part, however, these are distinctions that can only be made when the bird is in the hand. Yet the experienced naturalist or the intelligent hunter is able to recognize at a glance not only the subfamilies but also the various species in each group by their subtle differences—general shape, posture on the water, outline in the air, or some special marking—and sometimes is able to do so nearly as far away as the duck can be seen (see figure 38).

Of all the birds that inhabit Louisiana, these are the ones for which our state is best known—for throughout the continent, the great Louisiana marshes are recognized as a duck and goose paradise. Indeed, the hundreds of square miles of water, rushes, roseau cane, three-cornered grass, and other marsh vegetation that line our Gulf shores form a superb habitat for these birds. When autumn comes, millions of ducks pour out of the northern lakes from Alaska and British Columbia to Labrador and funnel down into the Mississippi Valley, eventually settling for the winter in southern Louisiana. Seventy per cent of

the entire continental population of Blue Geese, and a goodly portion of the Snow Geese, winter in or near Cameron Parish. And from there to Mississippi, hordes of ducks of many varieties, along with the geese, abound in winter.

WHISTLING SWAN. *OLOR COLUMBIANUS.* Figs. 39, 40, 56

The swans, along with certain members of the heron family, are the only all-white birds that occur in Louisiana. The almost equally large White Pelican, as well as the Gannet, White Ibis, Wood Ibis, Whooping Crane, and Snow Goose, all differ from swans in that at least the tips of the wings are black (see figure 56). Swans are now extremely rare in this part of the United States. The present species has been positively identified less than a dozen times in Louisiana, although it is quite common on the Atlantic Coast in winter. The few records of it in our state are scattered from late November through February.

Because of the difficulty of distinguishing between Trumpeter and Whistling Swans, there are few reliable records of either species in Louisiana. Although the Trumpeter is the larger of the two, measurements and weights overlap and cannot be depended upon, according to Francis H. Kortright, author of *Ducks, Geese and Swans of North America.* Any specimen over fifty-five inches long, with bended wing over twenty-three inches, and weighing more than twenty pounds is probably a Trumpeter. A specimen weighing less than eighteen pounds is probably a Whistler. The Whistling Swan sometimes has a yellow spot at the base of the bill, but since this mark is not always present, its absence does not indicate that the bird in question is a Trumpeter. In the Trumpeter the nostrils are located about halfway between the tip of the bill and the feathering at the base of the bill, while in the Whistler they are usually closer to the tip of the bill (fig. 39). This character is likewise variable, as is also the presence in the Trumpeter of twenty-four instead of twenty tail feathers. By far the best criterion lies in the relationship of the trachea, or windpipe, to the breastbone in the two species. In both the windpipe loops through a cavity in the breastbone. In the Trumpeter, however, the windpipe has a loop over a bony hump in the breastbone. In the Whistling Swan the loop of the windpipe in the breastbone is at no point separated by a bony partition, and the windpipe simply folds on itself in passing in and out of the breastbone (fig. 40).

The Mute Swan (*Cygnus olor*) is a European species that is now common in the wild state in the vicinity of Long Island and in other localities on the middle Atlantic seaboard. Domesticated individuals are frequently seen elsewhere

CHARACTERISTICS OF SUBFAMILIES OF DUCKS AND THEIR ALLIES

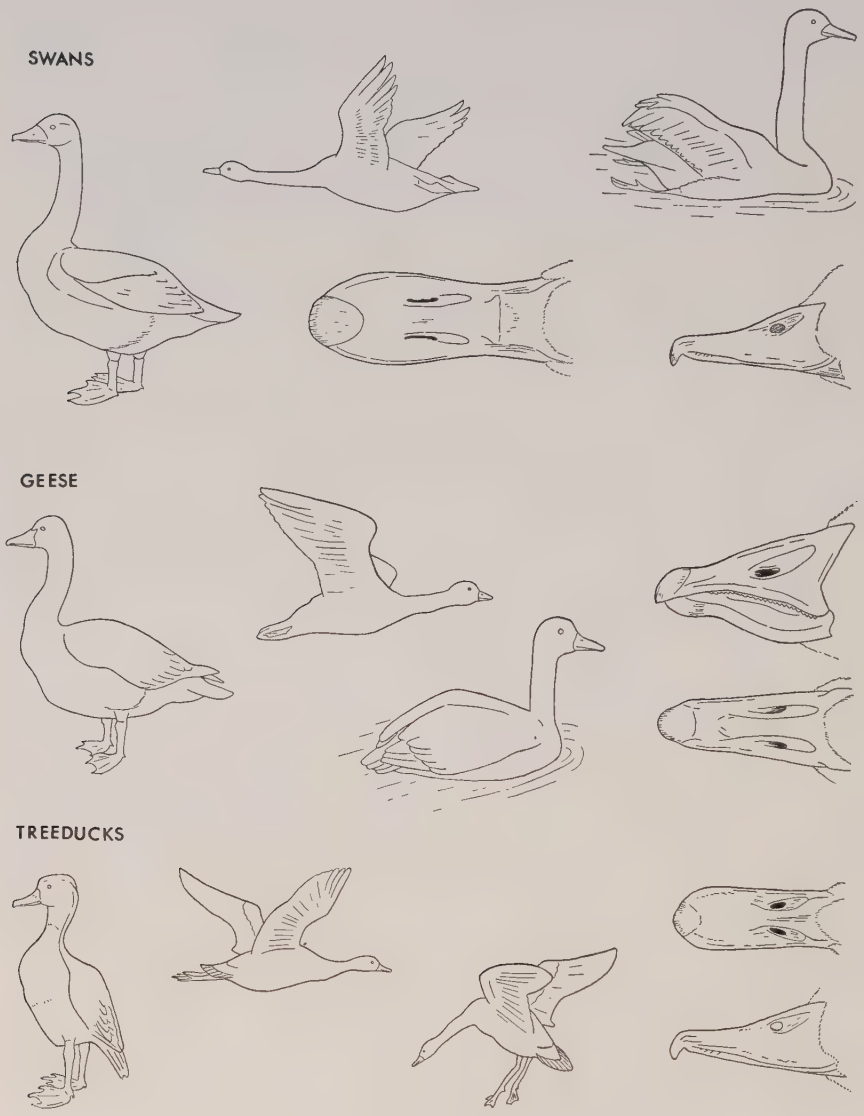

FIGURE 38. (part)

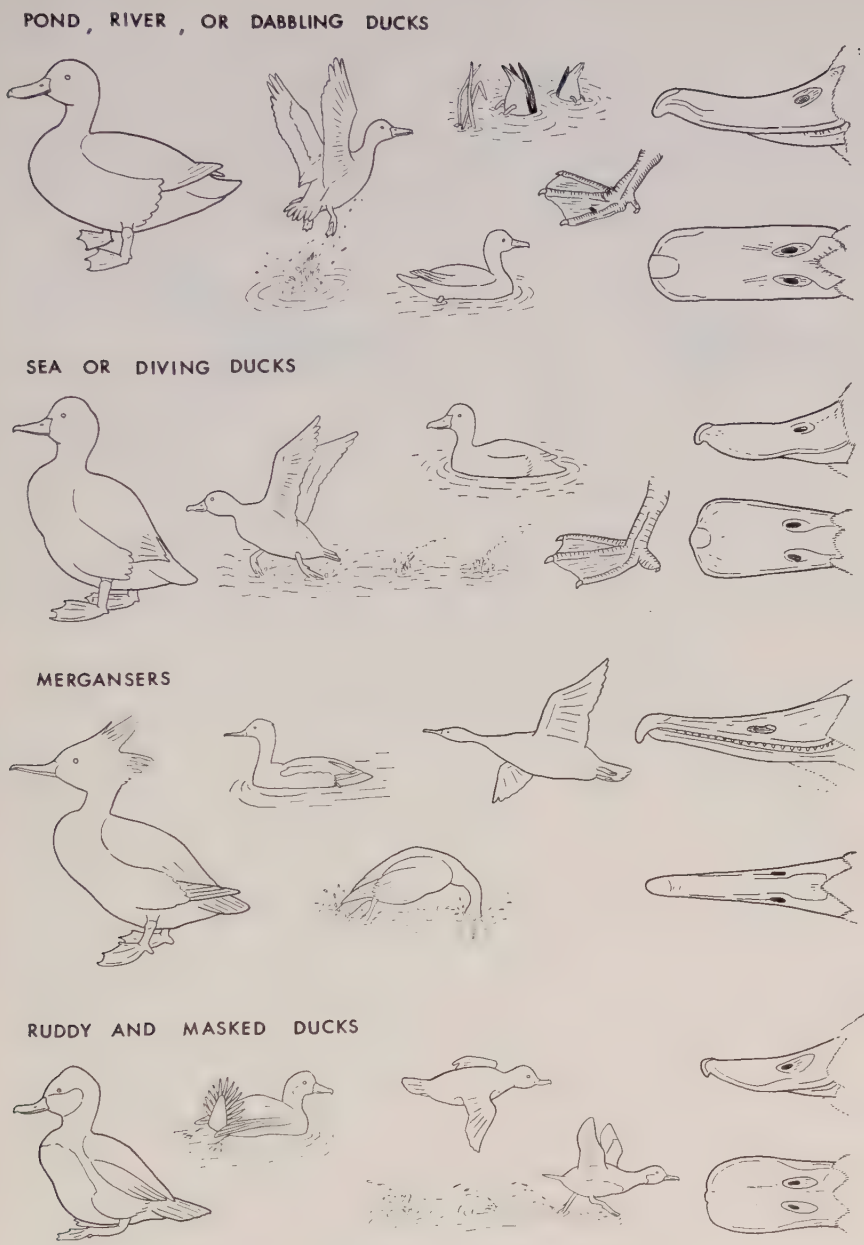

FIGURE 38. (concluded)

in city parks. Even these birds sometimes go wild. In the adult Mute Swan there is a bulbous, black swelling at the base of the pinkish bill, but one of its main distinctions from the two preceding species is that the trachea is simple, not entering the breastbone at all.

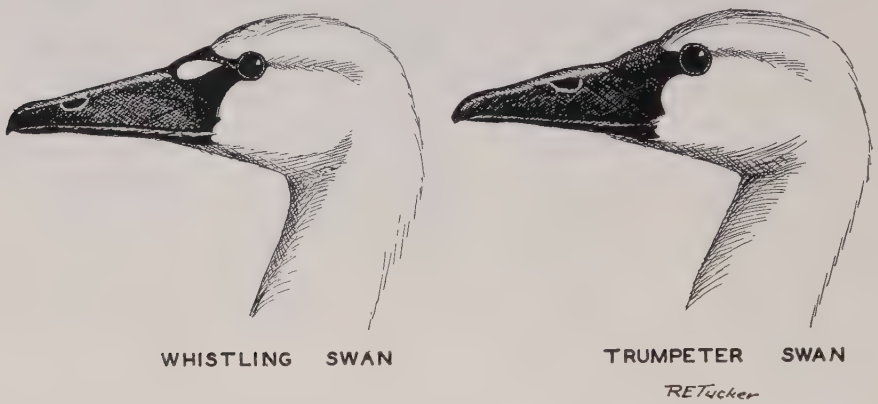

Fig. 39. Heads of two swans, showing particularly the more forward position of the nostril of the Whistling Swan and the spot at the base of its bill.

TRUMPETER SWAN. *CYGNUS BUCCINATOR.* Figs. 39, 40

This magnificent bird is one of the largest and rarest of all North American birds. Not many years ago it was considered virtually extinct. Through rigid protection of the surviving pairs, the species is now making what appears to be a notable recovery, although there are still probably no more than five or six hundred individuals in existence, mainly in British Columbia and in Red Rock Lakes Refuge near Yellowstone National Park. Trumpeter Swans require almost complete solitude on their breeding grounds; hence, as more and more of the wild areas of the great Northwest were settled by man, the farther back these birds retreated. In their reproduction they are exceedingly nonprolific, and there is always considerable loss from predators and other natural agencies. Consequently every time a swan is killed by a gun in the hands of an unscrupulous man, it takes several generations for a breeding pair to make up this loss. In winter the Trumpeters forego much of their breeding season wariness and oftentimes expose themselves to hunters. Resulting losses are almost impossible to combat, even by the most diligent efforts of conservation agencies. The perpetuation of this fine bird, therefore, requires all the intelligence and effort on the part of conservationists that can be mustered, and, even so, success is by no means assured.

There have been no reports of the Trumpeter Swan in Louisiana since 1915. There are indeed only two dated records for the state. How the birds that formed the basis of these two records were identified is not known, and in view of the great difficulty of separating this species from the Whistling Swan (see preceding account), it is unfortunate that we do not have additional details.

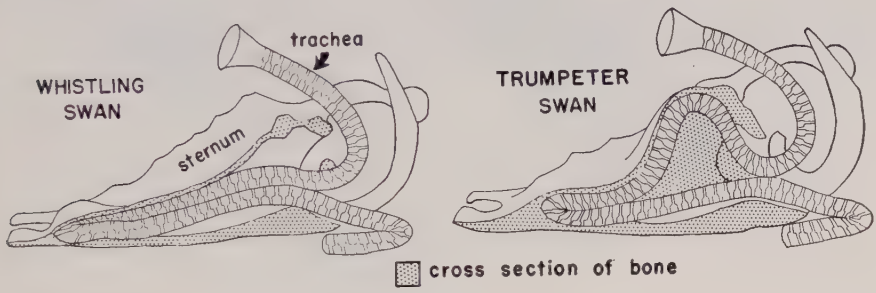

FIG. 40. The arrangement of the trachea or windpipe in the breast bone of the Whistling Swan and Trumpeter Swan. In the former it merely loops on itself within the sternum, while in the latter a partition of bone separates a section of the tracheal fold within the sternum.

CANADA GOOSE. *BRANTA CANADENSIS.* Pl. V; fig. 41

The "Canadian honker," as this common winter visitor is often called, needs little or no introduction. When the first cool air from the north moves into Louisiana in early autumn, the first V-shaped formations of Canada Geese may be seen winging their way southward over our state or settling on the sand bars along our large rivers. The majority of them end up on the coastal prairies, particularly in southwestern Louisiana; however, the flats along the Mississippi River also hold a few during the winter months. The main fall flight appears by October 12 and remains with us until late March. Honkers are always much less numerous in Louisiana than either the Blue or Snow Goose. But a general decrease in their numbers in recent years may be in large measure the result of the establishment in the Mississippi Valley of many new waterfowl refuges, each of which is tending to retain more and more Canada Geese in winter; hence fewer birds than before actually reach the Louisiana coast.

There is considerable color and size variation in the Canada Geese that migrate into the state. No hunter who has killed many of these birds has failed to note that some individuals are exceedingly dark breasted, while others are very light colored below. And some are huge, long-billed, long-winged birds, while others are diminutive in size. Some of this variation is now

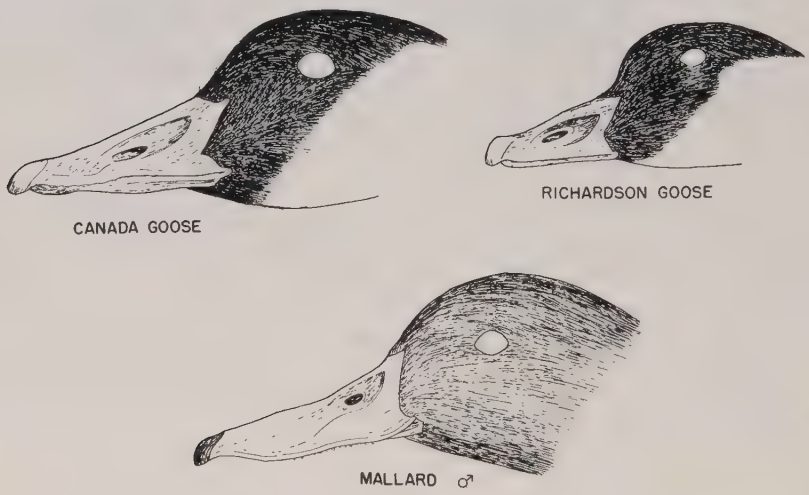

FIG. 41. Head of the Canada Goose and that of its diminutive relative, the Richardson Goose, in comparison with the head of a Mallard. Note particularly the size of the bill in each.

known by specialists, who have studied large series of specimens from various breeding populations, to be geographic in nature. Canada Geese tend to increase in size from north to south and in darkness from east to west, except in the more southern regions of the breeding range, where geese show a paleness that is expected in arid and basin country. There are ornithologists, however, who believe that not all of the observed variation is geographic within a single species. Instead, they contend that *two species* are involved, which, although very similar in color patterns, are actually discrete, noninterbreeding entities—or at least entities between which hybridization happens too infrequently to affect the over-all complexion of the population. These specialists would recognize on the one hand, the Canada Goose (*Branta canadensis*) and

on the other hand, the small Richardson Goose (*Branta hutchinsii*). The latter, to be sure, is only a miniature edition of its larger relative, but the size differences are conspicuous. Indeed, the so-called Richardson Goose is not much larger than a Mallard and its bill is unusually small (fig. 41). Also, there is evidence that this diminutive goose has numerous peculiarities in its behavior, such as its choice of nesting sites and the way in which it constructs its nest. Even on its wintering grounds it does not always associate with the larger birds, as was evident in the winter of 1952-53 when a small flock of 15 individuals of the *hutchinsii* type resided for two months on the Sabine National Wildlife Refuge in Cameron Parish. This little group was always seen apart from other geese, unquestionably avoiding their company.

Although the problem requires much additional study, based in part on the acquisition of breeding specimens from some of the more inaccessible parts of the Arctic, I, for one, would be inclined, on the basis of current evidence, to recognize the two species. But in order to conform here as nearly as possible to the A.O.U. *Check-List of North American Birds*, I have treated them together under the name *Branta canadensis*. Most of the records of the diminutive form in Louisiana are from late November to late January and from the southwestern part of the state; but its relative abundance and its exact distribution in the state require further analysis. Hunters who shoot small white-cheeked geese that they suspect to be this small form should save at least the head and one of the wings from such specimens and forward them to the Museum of Zoology at Louisiana State University. Measurements of the bill and of the wing are almost always sufficient basis for positive identification.

WHITE-FRONTED GOOSE. *ANSER ALBIFRONS.* Pl. V

This fine goose, which commonly goes by the name of "speckle belly," is a moderately common spring and fall transient in Louisiana. Fall migration begins in early October and the last spring migrants are gone by April 15. Since the main North American contingent of the species winters in southern Texas and in Mexico, these geese usually become scarce here in midwinter. The adults are easily recognized by the irregular black blotches on the belly and by the white-feathered area that surrounds the base of the bill. The young, however, resemble the immature of the Blue Goose, from which they may be distinguished by their yellow instead of bluish feet and their light-colored bills. The flight note of the "speckle belly" is a clanging, high-pitched cackle that has been described as *kah-lah-a-luck*.

SNOW GOOSE. *CHEN HYPERBOREA.* Pl. V; fig. 56; p. 160

The Snow Goose, as the name implies, is almost entirely white; only the wing tips are black. Although considerable study has been given the matter, there are still some authorities who argue that the Snow Goose is nothing more than a "white phase" of the Blue Goose. They correctly point out that the two forms are identical in nearly every feature except color. The full evidence, pro and con, is much too involved to discuss here. Both breed on Southhampton Island, in Hudson Bay, and numerous individuals have been observed there that have appeared to be hybrids—that is, individuals with general Blue Goose coloration except for their all-white or "piebald" under parts. Such intermediates in color are also frequently seen in the vast hordes of Blue and Snow Geese that winter in Louisiana.

A common fallacy in Louisiana is the application of the name "brant" to the Snow and the Blue Goose. The true brants, of which there are two species, the American and Black Brants, are quite different. They are found in winter on the Atlantic and Pacific coasts, only rarely in the Mississippi Valley. Neither has ever been recorded with certainty in Louisiana.

Snow Geese arrive in Louisiana in the first week of October and remain in numbers until late April, although a few may linger until May and occasional individuals are sometimes seen in summer. A one-day census during Christmas week in 1951 at the Sabine National Wildlife Refuge, which is the main concentration area of the winter population of geese in Louisiana, revealed an estimated 32,000 Snow Geese and an approximately equal number of Blue Geese. Large numbers are sometimes seen near the mouths of the Mississippi River, but never in such concentrations as occur in Cameron Parish, where sometimes Blue and Snow Geese fill the skies.

BLUE GOOSE. *CHEN CAERULESCENS.* Pl. V; p. 160

Each autumn tens of thousands of Blue Geese, in company with kindred species, pass southward down the Mississippi Valley to winter in Louisiana's immense coastal marshes. Each spring they rise out of these same marshes to wing their way northward. For generations men have watched this seasonal procession and have never failed to be thrilled by it. But to those who study birds and seek to learn about their lives and habits, the migrations of the Blue Goose held, until 1929, a very special challenge. Once the birds had passed over the forests and fields of southern Canada, they disappeared completely. No one knew where they went, where they built their nests, the color of their

Explanation of *Plate V*

Adult Geese

1. Canada Goose (p. 153). **2.** White-fronted Goose (p. 155). **3.** Blue Goose (p. 156). **4.** Snow Goose (p. 156).

eggs, or the appearance of their downy young. In brief, despite the fact that the Blue Goose was one of our best-known birds, it was one of the very few species occurring north of Mexico whose breeding grounds continued to remain unknown to science.

The eventful finding of the nesting area was unique among similar accomplishments in the vast polar reaches of North America in that it was made as a "result of direct and intentional research, in contradistinction to fortuitous discovery." A concerted search was begun in 1923 and lasted six years, in which an approximate distance of 30,300 miles was covered by various parties. On June 26, 1929, however, J. Dewey Soper, acting for the Department of the Interior of the Canadian government, discovered the species raising its young on the faraway tundra of western Baffin Island—"vast, sodden marsh-lands bounded by the reeking mud flats and the everlasting ice of Foxe Basin; . . . a gloomy land, haunted by leaden skies and harassed by chilling gales of rain and snow." After describing the setting in these terms in his classic report, *The Blue Goose*, Soper continues: "In such a land the young Blue Goose is born and raised to take part in the long fall flight to the softer clime of his winter home on the coast of Louisiana."

This southward flight of Blue Geese, in which they are joined by Snow Geese, is not a nonstop event, but involves fewer stopovers by far than does the southward flight of the Canada Goose. The juveniles of the year, with comparatively few hours "flying time credit" since they pecked their way from the egg in midsummer, are the ones least able to withstand the ordeals of the journey, and may fall by the way to rest. It is undoubtedly for this reason that in the lower Mississippi Valley, toward the end of the long trek, one more often finds immatures than adults—in fields, along the roadside, or in small ponds and lakes.

The adult Blue Goose, with its dark body and white head, is often called the "eagle-head goose." Seldom, however, is the head of either the Blue or Snow Goose immaculate-white; it is instead highly discolored with ferruginous stains acquired as a result of the birds' habit of "grubbing" in the marsh for their food of roots and tubers.

The first Blue Geese arrive in the state in early September but the main passage takes place after the first week of October, sometimes as late as the very end of this month. Like the Snow Geese they depart in late April and early May and a few nonbreeding individuals are sometimes found in the marshes in midsummer.

ROSS GOOSE. *Chen rossi.* Fig. 42

This goose, which is not much larger than a Mallard, is a miniature edition of the Snow Goose. It differs further from its large relative by usually having a series of warty protuberances on the bill, which, however, cannot be seen in the field at any great distance. There are only two records of its occurrence in Louisiana, both several decades ago in the southwestern part of the state. But the dearth of reports may be due in part to its similarity to the Snow Goose. The Ross Goose breeds along a tributary of the Perry River, about fifty miles north of the Arctic Circle. Practically the entire population winters in California.

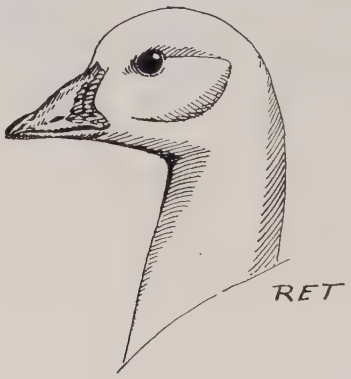

Fig. 42. Head of the Ross Goose, showing the warty protuberances at the base of the bill, which, along with the much smaller body size, serve to distinguish the species from the similar appearing Snow Goose.

FULVOUS TREEDUCK. *Dendrocygna bicolor.* Pls. VI, VII; fig. 38

One glance at a treeduck is enough to reveal, even to the uninitiated, why it is classified separately from other ducks. The legs and feet are exceptionally long and in flight extend well beyond the tail in a most unducklike manner. The Fulvous Treeduck occurs rather commonly in southwestern Louisiana, especially in August and September in the rice fields, where it is reputed to nest in considerable numbers. The common name is "Mexican squealer," which is appropriate on two counts: the call is a long, squealing whistle; and, by the first week of November, practically the entire Louisiana population has moved southward to southern Texas or Mexico. There are, however, records

for every month of the year except February. The long, bluish legs and long neck, the tawny coloration, V-shaped white patch at the base of the tail, and the strong gooselike flight make the species easily identifiable. The wingbeat is slow and the bird not infrequently glides. At a distance and in silhouette it suggests somewhat a White-faced Ibis. When coming in for a landing the body and neck assume an inverted "V" posture, much like that of a goose about to land, instead of feet first and head high like most ducks.

John J. Lynch, who has made a special study of the nesting of the Fulvous Treeduck in Louisiana rice fields, reports that nest building does not commence until the middle of July, possibly because the young rice does not offer sufficient nesting cover before that time. He says that the nests are built on low rice field levees or on the dikes of the drainage canals and, not infrequently, are floating structures in the flooded rice stands themselves. These rafts are described as averaging fifteen inches across and ten inches in depth, the immersed portion being four or five inches in thickness. Rice straw is the principal material used in the nest construction. Lynch further states that the clutch size varies from ten to fifteen eggs in number, twelve to fourteen being the average.

MALLARD. *ANAS PLATYRHYNCHOS.* Pls. VI, X; p. 161

This common winter resident is the best known of all North American ducks and requires no special introduction. It has been extensively domesticated and is thus often seen in barnyards and parks. Wild Mallards are widespread throughout the state from mid-October to mid-March, and they remain in some localities until late April or early May. The male has an iridescent green head, a dark breast, a light upper surface, and a white ring around the neck. The speculum is an iridescent bluish green, bordered by white lines. Whereas the male can hardly be confused with other species, the female closely resembles both the Mottled and Black Ducks. From these she differs in being lighter colored and by having conspicuous, white outer tail feathers. The speculum is bordered by the two prominent white bars, whereas in the other species mentioned there is never more than one white bar.

The Mallard is the first of the subfamily Anatinae, the "dabbling ducks." The species in this group are also called "pond" or "river" ducks, since ordinarily they inhabit shallow lakes, ponds, and sloughs where they can get their food by tipping up and dabbling, rather than by diving. Most of their food consists of material that they are able to reach with only the front half of the body submerged. "Diving ducks" (subfamily Aythyinae), on the other

Blue and Snow Geese Fill the Sky PETER SCOTT

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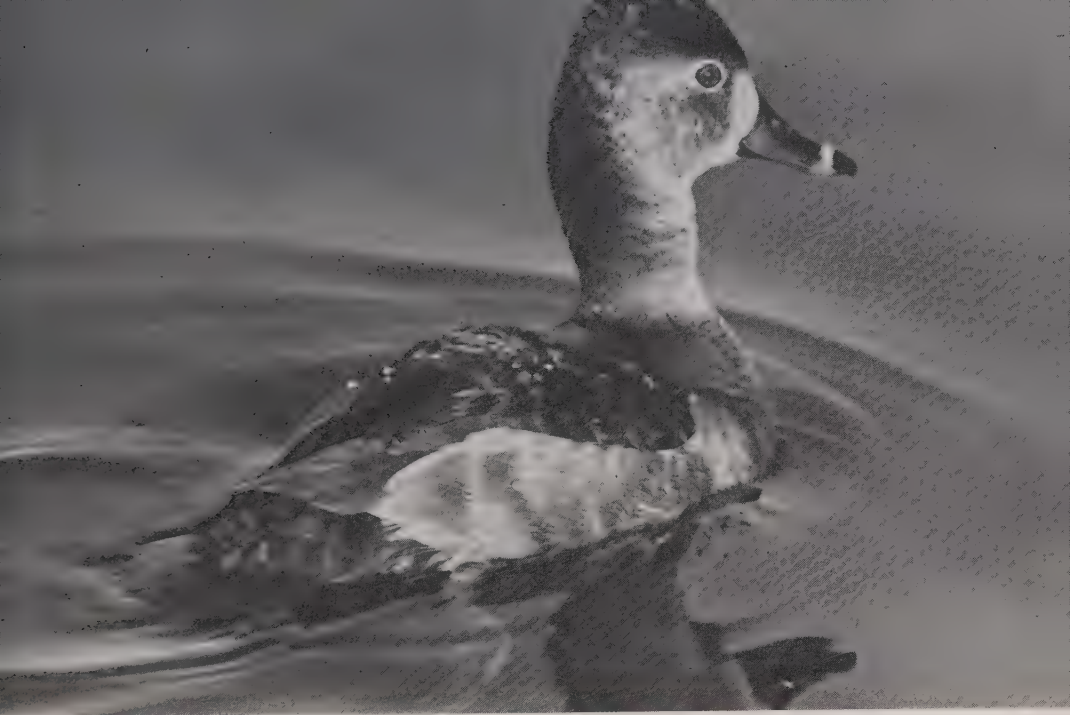
Ducks Rising Out of the Marsh ALLAN D. CRUICKSHANK

Mallard Drake ALLAN D. CRUICKSHANK

Male American Pintail in Duplicate ALLAN D. CRUICKSHANK

Male Blue-winged Teal and Its Mate ALLAN D. CRUICKSHANK

Male American Widgeon ALLAN D. CRUICKSHANK



Female Ring-necked Duck ALLAN D. CRUICKSHANK

Male Hooded Merganser ALLAN D. CRUICKSHANK

Male Lesser Scaups, the dos-gris, *in Formation* ALLAN D. CRUICKSHANK

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Female Canvasback, the "Horse Duck" ALLAN D. CRUICKSHANK

hand, go down to depths of thirty feet or more for aquatic plants or for their diet of fish. The dabbling ducks usually swim with the tail high out of the water and spring straight upward into the air when taking flight. They generally have a pronounced speculum of iridescent colors in the wing and only a minute lobe on the hind toe. In contrast, the diving ducks typically hold their tails close to the water when swimming and have to run for some distance over the surface before becoming airborne. They also lack a speculum and have a well-developed lobe on the hind toe (see figures 33 and 38).

BLACK DUCK. *Anas rubripes.* Pls. VI, X

This species visits Louisiana in winter in moderate numbers, but its main wintering grounds are to the east of us. It arrives in early October and remains moderately common until the end of March. Unlike the male and female Mallard, the sexes of the Black Duck are quite similar. The present species is a large blackish duck, with prominent white under surfaces to the wings, which show in flight. The speculum is an iridescent purple. The Black Duck is most likely to be confused with the Mottled Duck, but the latter is paler with a less streaked head and neck, an immaculate throat, and a more greenish speculum, bordered in back by a prominent white line. Even in fresh plumage the Black Duck has only a faint white line on the back of the speculum, and this is usually concealed in the folded wing. Field identifications that distinguish between the Black and Mottled Ducks should be made with great caution.

MOTTLED DUCK. *Anas fulvigula.* Pl. VI

This is the "summer duck," a bird well known to residents along our Gulf Coast, where the species nests commonly and occurs in considerable numbers even in winter. Aside from the occasional nesting of the Blue-winged Teal and the very localized nesting of the Fulvous Treeduck, this is the only duck that breeds in the great Louisiana marshes. Most ducks withdraw far to the north and west of us to rear their young. This is not true of the Mottled Duck, however. A bona fide native, it would surely speak a special brand of Cajun, if ducks could talk, so typical is it of the French section of our state. By the end of March Mottled Ducks are building their well-concealed nests of grasses, softly lined with contour feathers and down plucked from their breasts, and laying their eight to eleven greenish-white eggs. The nests are always in a salt or brackish marsh, sometimes on the edge of a lake or pond, but not infrequently hidden away in a great expanse of reeds and rushes some distance from open water.

As already noted, the Mottled Duck resembles the other "black ducks." It is distinguished from the female Mallard by the absence of white outer tail feathers and by having only one white bar on the wing where the hen Mallard has two. It is considerably paler than the true Black Duck, has a greenish instead of purplish speculum, and has a white wing bar where the Black Duck has only a faint indication of one in fresh plumage, or none in worn plumage. The Mottled Duck is sometimes rather scarce in winter, at which time the bulk of the population possibly moves down along the Texas coast or even into Mexico. The species seldom, if ever, ranges northward in the state above the coastal tier of parishes.

GADWALL. *Anas strepera.* Pls. VI, X

The Gadwall is generally known to sportsmen in Louisiana by the name of "gray duck." The male is a drab, gray bird that on the water shows few distinctive markings; the female is even less well marked. The drake possesses a chestnut patch on the fore part of the wing and has a white area on the rear part of the wing, but when the bird is at rest the flank feathers sometimes cover the wing and conceal these markings. The rump and the feathers under the tail are black, and the sharp contrast of these parts with the gray body provides the best feature for field identification. The female appears plain brown at a distance and can best be identified at rest by the white patch in its wing and by its yellowish bill. It is browner (less grayish) than the female Pintail, and the feet are yellow instead of gray.

From early October until April the Gadwall is one of the commonest ducks in southern Louisiana, especially in Cameron Parish. It is mainly a transient elsewhere in the state.

AMERICAN PINTAIL. *Anas acuta.* Pls. VI, VII; p. 161

Both sexes of this species may be easily distinguished by their long, pointed tails—particularly long in the males because of the great elongation of the central tail feathers. Furthermore, the adult male has a brown head with a white stripe on the side of the neck. The female is separable from other nondescript dabbling ducks by her greater slimness, proportionately longer and thinner neck, and bluish bill. The bill and feet of both male and female are bluish gray.

Pintails, or "sprigtails" as they are sometimes called, generally arrive in numbers from the North during the middle of September and are widespread

over the state until April, sometimes lingering in coastal localities until May. They are highly esteemed by sportsmen as one of the most delicious of all ducks.

GREEN-WINGED TEAL. *ANAS CAROLINENSIS.* Pls. VII, VIII

When the duck-hunting season opens in Louisiana, these small ducks are one of the commonest species in the coastal marshes. With daily bag limits now reduced to four ducks, most hunters object to this species since it takes three teal to equal the weight of one Mallard or one such highly delectable prize as a Canvasback. Because of their small size and their distinctive markings, the three species of teal are not likely to be confused with other kinds of ducks. The male of the present species has a reddish head with a prominent green stripe through the eye, and in front of the wing there is a conspicuous vertical white mark. At rest on the water the female can hardly be distinguished from the female Blue-winged and Cinnamon Teals unless she flutters her wings and reveals their color pattern. As the name implies, the female Green-wing has a dark wing with a green speculum; the Blue-winged and Cinnamon Teals both have the whole fore part of the wing pale blue. The present species arrives in late September and remains with us until the first of April.

BLUE-WINGED TEAL. *ANAS DISCORS.* Pls. VII, VIII; p. 162

A few Blue-wings remain in the Louisiana marshes during the summer to breed, laying eight to twelve light, cream-colored, unmarked eggs in a down-lined nest of reeds and grasses on the margin of a pond or slough. A few individuals also occur here in midwinter, but the species is most abundant in the migratory season of late summer and autumn and again in spring. Blue-winged Teal winter abundantly in Mexico and even as far away as South America, and it is the passage of these intrepid travelers that causes the seasonal fluctuations in local abundance. Migrant Blue-wings are by far the earliest ducks to appear in Louisiana as part of a southward migration; before the last week of August they are here in numbers, and by the time the other ducks pile into our marshes, the main guard of Blue-wings has moved on to points farther south.

Identification of the adult male Blue-winged Teal is easy because of the combination of large blue wing patches and the crescent-shaped white markings on an otherwise dark head. Females and immatures, however, are difficult to distinguish from the females and juvenile males of Green-winged and Cinnamon Teals. In the former the wings are dark with a small green speculum. No satisfactory means exists for separating the females and juvenile males of the Blue-winged and Cinnamon Teals, since all have a large patch of blue on

the fore part of the wing and are otherwise almost identical. The latter species is very rare in this state, and almost all these nondescript ducks with blue wing patches can be assumed to be the Blue-winged Teal.

CINNAMON TEAL. *Anas cyanoptera.* Pl. VIII

Although there are fewer than a dozen definite records for this western teal in our state, it possibly occurs here regularly in winter. Hunters who happen to bag one should send the whole specimen packed in dry ice to the Louisiana State University Museum of Zoology in order that the specimen can be preserved. The highly attractive cinnamon color of the head and body of the male of this species makes it easily identifiable. But in the case of all such birds of rare occurrence, a preserved specimen is desirable. The young male, less than a year old, and the female are indistinguishable in life from Blue-winged Teal of comparable age and sex. Specimens in these plumages can be identified in the hand when a careful study is made of certain structures such as the bill, but field identification should not be attempted except in the case of adult males.

EUROPEAN WIDGEON. *Mareca penelope.* Pl. VI

There are only two records of this species in the state; three were killed in Cameron Parish in 1915 and another was shot about 1929 a few miles north of Alexandria. The European Widgeon is not known to breed in North America, except rarely in Greenland, but it occurs rather regularly on both the Atlantic and Pacific coasts in fall and winter and inland in spring. It comes to us possibly from Iceland or Scandinavia, conceivably by some great circle route.

In plumage pattern and outline the European Widgeon resembles the following species, but the male has a grayish (instead of brownish) back and a reddish head with a cream-colored crown. In the American Widgeon the

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Explanation of *Plate VI*

Some Dabbling Ducks and the Fulvous Treeduck, All in Winter Plumage

1. Mallard (p. 159), male in front, female behind. **2.** Black Duck (p. 165) in front; Mottled Duck (p. 165) behind. **3.** American Pintail (p. 166), male in front, female behind. **4.** Fulvous Treeduck (p. 158). **5.** male Gadwall (p. 166). **6.** Shoveler (p. 169), male in front, female behind. **7.** male European Widgeon (p. 168). **8.** male American Widgeon (p. 169).

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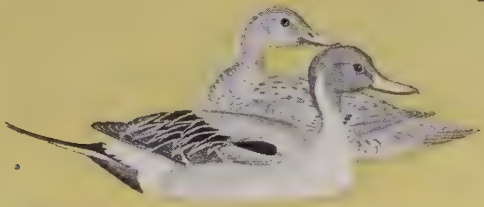

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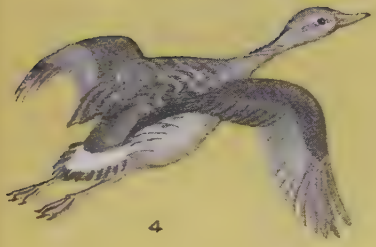

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head is grayish, finely streaked with dusky, and there is a green band passing from the front of the eye to the nape and thence down the back of the neck. The top of the head is usually white, although occasionally it is buffy. The female European Widgeon, when seen at close range, shows a slightly reddish tinge to the head, a color the female American Widgeon lacks. Hunters shooting female widgeon should inspect the axillars (see figure 7). If these feathers are *dusky* instead of pure white the bird is the European Widgeon and should be sent at once to the Louisiana State University Museum. Because of the great scarcity of records of the species anywhere in the South, ornithologists would justifiably view with skepticism any report of this species' occurrence not substantiated by a preserved specimen.

AMERICAN WIDGEON. *Mareca americana.* Pls. VI, VII; p. 162

This is the species that is commonly known under the names "Baldpate" or simply "widgeon." The appellations "zin-zin," "whistling duck," and "whistling dick" are also applied to the species, all in reference to its call notes. The male utters a rather musical *whew, whew, whew* that is repeated at frequent intervals. The notes of the female are a *qua-awk, qua-awk.*

The American Widgeon is a common winter resident over the entire state; but like nearly all our ducks, it is much more abundant in the coastal areas. The main contingent of the species arrives in October and departs in late April or early May, although a few individuals sometimes reach here in September and others sometimes linger until late in May.

The male of this species is easily distinguished by the white (rarely buffy) top to its head and by the extensive area of *white on the fore part* of the wing. (The white in the wing of the Gadwall is on the speculum and hence toward the hind part or tip of the wing.) In good light a green patch through the eye and black under tail feathers may be noted. Females and immatures resemble female Pintails; but the body is browner in contrast to the gray head, the white patch is usually present on the fore part of the wing as in the male, and the elongated central tail feathers are lacking. The bill in both sexes is bluish with a black tip and is so short that its very size serves as a useful field character.

SHOVELER. *Spatula clypeata.* Pls. VI, VII

Sportsmen and men of the marsh country call this bird the "spoonbill" because of the spoonlike shape of its long bill. Although much is rightfully said of the beauty of the Wood Duck, the color pattern of the drake Shoveler

leaves little to be desired on this score. The head is green, the back and tail black, the breast and shoulders white, the fore part of the wing blue, and the sides nothing less than claret-red. The female is rather drab and inconspicuous. Like the male, she has a large patch of pale blue on the fore part of the wing. In this respect she resembles the Blue-winged Teal, but she is bigger and has a large spoon-shaped bill.

The Shoveler usually arrives here in late September or early October and stays with us until late April, rarely until the second week of May. It is one of our commonest ducks, being especially numerous in spring.

WOOD DUCK. *AIX SPONSA.* Pls. VII, VIII

Most naturalists agree that the male Wood Duck is North America's most beautiful bird. Its color pattern is resplendent with rich chestnut, splashes of black and white, golden flanks, and even red eyelids arrayed amid iridescent greens, purples, and bronze. Added to all this, the feathers of the head form a crest, as if a final touch of splendor were needed. The female has a rather nondescript brown body and gray-crested head, with a prominent white ring around the eye. Even in flight at distances where none of its brilliant colors can be seen, the Wood Duck remains a distinctive bird. It holds its head above the level of the back with the bill pointed downward at a sharp angle. It also has a long, squarish tail and a short neck. The call note, which is often uttered in flight, is a squealing *hoo-eek, hoo-eek.*

This species and the Hooded Merganser are among the few North American ducks that normally nest in trees. The nest of the Wood Duck is placed in a tree at heights varying from four to as many as fifty feet from the ground. The nest cavity itself may be quite shallow or as much as six feet in depth. No materials are transported to the nest, but down feathers from the breast are used to cushion the normal complement of ten to fifteen dull white or creamy-white eggs.

The cutting of the forests, drainage of swamplands, excessive hunting pressure, and, probably above all, the commercial traffic in feathers for artificial trout flies, nearly led to the Wood Duck's extinction. Timely action in 1918 forbade the killing of the species in both the United States and Canada, and the bird has now made a notable comeback. Since 1941 some states have permitted the inclusion of one Wood Duck in a bag, on the premise that mistakes are made in identification as a flock of ducks sweeps in toward a duck blind. In so many words, allowing one Wood Duck to a bag would permit the hunter making a mistake to "bring in his mistake," instead of having to

"ditch" it for fear of meeting a warden. The illogic of this argument is simply this: what is to prevent the careless hunter from making a second mistake? What does he then do with his second mistake? The proper solution, and the one which good sportsmen adopt, is to learn to identify ducks on the water and in the air. This also adds immeasurably to the fun of hunting. The Wood Duck is now fairly common in Louisiana, yet it is my personal opinion that its numbers in most areas are not sufficient to justify its being killed for sport.

A few brief words should be said about the classic debate among naturalists and sportsmen concerning the question of how young Wood Ducks get out of their nests high up in hollow trees. Some have said that the mother bird carries them in her bill down to the water. Still others, possibly observing the sharp nails on the ducklings' claws, have insisted that they climb down the tree trunk like rats. Finally, there are those who contend that the young jump, spread-eagle, out of the nest and hit the water or ground with their tiny feet outstretched. To my knowledge there is still no reliable observation in support of the first two methods, but there is ample testimony by capable and dependable observers that the last-named technique is employed. Moreover, when Wood Ducks are hatched in captivity on game farms, it is necessary immediately to drop the young ducklings from a height of six to eight feet into a tank of water. Not until the little birds have gone through this experience of falling will they proceed to take food. The behavior pattern in the duckling's first day of life seems, therefore, to be a chain of precise events, each of which must be experienced in proper order before the bird can begin any subsequent step in the sequence.

The Wood Duck is a fairly common permanent resident throughout the heavily-wooded swamps of the state. In the northern part of the state it is possibly somewhat less numerous in winter than in summer, but in southern Louisiana its population appears to increase slightly in the cold months. At that season it is not unusual to find a few of these birds in the coastal marshes, where they seem out of place in a setting without trees. Possibly they go there only in the daytime to feed, returning at night to some wooded swamps on the northern edge of the marsh belt.

REDHEAD. *AYTHYA AMERICANA.* Pls. VIII, X; fig. 43

This is the first of the species in the subfamily Aythyinae, the "diving" or "sea" ducks. Members of this group are generally found in deep waters. Unlike the preceding "dabbling ducks," which simply tilt in the water, head down,

tail and feet in air, feeding only as deep as the outstretched neck will reach, the "diving ducks" plunge under the surface and sometimes pursue fish to great depths or feed on plants growing on the bottom. The first step in the identification of a duck on the water is to decide to which of these subgroups it belongs (see figure 38).

As the name foretells, the male of this species has a red head, but so does the male Canvasback. The two may be distinguished by the fact that the Redhead has a gray back in contrast to an all-white back in the adult Canvasback, and by the fact that in the present species the break in slope between the *blue* bill and feathers of the head is marked by a sharp angle; in the Canvasback the top of the head and the *black* bill form a continuous and almost even slope (fig. 43). The female Redhead may be separated from the female Canvasback by its browner upper parts (less whitish) and by the angle between the forehead and bill, as described above. More confusion is likely to result between the female Redhead and the female Ring-necked Duck. The former has only a slight suffusion of white on the cheeks and it lacks a white eye ring.

Redheads are rather uncommon winter residents on our inland lakes, but sometimes they appear in great rafts of several thousands in our offshore waters. They arrive in the first week of October and remain until March, and sometimes a few stay as late as mid-April.

RING-NECKED DUCK. *Aythya collaris.* Pls. VIII, X; p. 163

The name of this bird should have been "Ring-*billed* Duck." Although it does possess a deep chestnut ring around an otherwise black neck, this feature is not nearly as prominent as the conspicuous white ring around the bill. The Ring-necked Duck resembles the two kinds of scaups and often occurs with them, especially with the Lesser Scaup. If, however, one knows what to look

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Explanation of *Plate VII*

Ducks in Adult Winter Plumage

(Males in foreground when both sexes are shown)

1. American Widgeon (p. 169). **2.** Blue-winged Teal (p. 167). **3.** Shoveler (p. 169). **4.** American Pintail (p. 166). **5.** Green-winged Teal (p. 167). **6.** Wood Duck (p. 170). **7.** Red-breasted Merganser (p. 183). **8.** Hooded Merganser (p. 182). **9.** Fulvous Treeduck (p. 158).

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for, the present species may be distinguished at great distances. The male Ring-neck, or "blackjack" as it is often called, has a black back and a prominent vertical white patch before the wing. Scaups, on the other hand, have a "salt-and-pepper" colored back that appears *very white* at a distance (suggesting the Canvasback at times), and they lack the splash of white in front of the wing. The bill in the scaup, instead of being ringed with white, is plain bluish with a black tip, hence the name "blue-bill." Females of the two are somewhat less distinct but still easily distinguished if one knows precisely what to look for. Female Ring-necks have a white eye ring and a light area around the bill that gradually blends in with the dark rear portion of the face and head, whereas female scaups have a prominent and sharply outlined creamy-white patch at the base of the bill and no eye ring.

Ring-necked Ducks are common to abundant in winter on the lakes inland in the southern half of the state, somewhat less numerous in our coastal areas and much less numerous in northern Louisiana. Like most of our ducks, they usually arrive in the first week of October and leave in April. The few individuals that rarely spend the summer here and there in the state are probably wounded birds that were unable to migrate when the time came for them to do so.

FIG. 43. Profiles in silhouette of two similarly colored ducks. In the Redhead the junction of the bill and the forehead forms almost a right angle, while in the Canvasback the angle is widely obtuse. The latter fact earns for the Canvasback its colloquial name of "horse duck."

CANVASBACK. *AYTHYA VALISINERIA.* Pls. VIII, X; fig 43; p. 164

This duck is very popular among sportsmen, probably because of its large size and the fact that under most circumstances its flesh is delicious, particularly when the first migrants arrive. Later, in some situations, their change of diet alters their flavor. Kortright, in his book, *Ducks, Geese and Swans of North America*, gives the average weight of 102 specimens as three pounds.

The white body, rusty-colored head, and sloping profile (see figure 43 and discussion under Redhead) clearly distinguish the Canvasback in the field. Immature individuals are not nearly as white on the back as adult males but the color of their heads and the slope of their profiles serve to identify them. The French name, *canard cheval*, or "horse duck," is an allusion to the shape of the head.

The species is a late arriver in the fall, making its appearance ordinarily after November 1. It is usually gone by the last half of April.

FIG. 44. Wings of the Greater Scaup and Lesser Scaup. In the former species the white in the primaries is much more extensive.

GREATER SCAUP. *AYTHYA MARILA.* Fig. 44

To distinguish between this and the following species on the water is nearly an impossible feat. Its size is slightly larger, but this difference can be reliably ascertained only by measurements of a specimen in the hand. In the proper light, the top of the head of the male shows a greenish gloss, whereas in the Lesser Scaup the sheen is purplish. In flight the Greater Scaup reveals a white stripe that extends, in both sexes, much farther toward the end of the primaries. There are comparatively few records for this species in the state, a fact attributable to the difficulty of distinguishing it from its smaller relative. One has a tendency to call all scaups "Lessers," and this is probably correct in the vast majority of instances, at least in fresh-water situations. To be precise, however, we should simply say "scaup." The "salt-and-pepper" color of the back, though it reflects in the sunlight as almost pure white, even at great distances, gives the scaups their common name of *dos-gris.* The other common name, "blue-bill," is self-explanatory (see discussion in connection with the Ring-necked Duck).

The Greater Scaup is said to frequent salt water more than the Lesser Scaup. Indeed, it is called *dos-gris de mer* in southern Louisiana. Indubitable records of its occurrence here range between November 2 and March 21, but there is as yet no positive record for February.

LESSER SCAUP. *AYTHYA AFFINIS.* Pls. VIII, X; fig. 44; p. 164

This is one of our most abundant ducks and surely one of the best known. It goes mainly by two names, "blue-bill" or *dos-gris.* In size and color it resembles the Ring-necked Duck, but it has a blue bill, lacking the white ring around the tip. The back is speckled black and white and reflects as almost pure white, whereas the Ring-neck's back is black. Seen from the side the scaup lacks the prominent vertical white patch before the wing that is so characteristic of the male Ring-neck. In the female scaup the line of demarcation is very sharp between the creamy-white area at the base of the bill and the dark face; in the Ring-neck this light area blends almost imperceptibly into the dark-colored area of the cheeks. The distinctions between the Lesser and Greater Scaups are discussed in the preceding account.

A few Lesser Scaup are almost always present on some of our larger lakes in summer, but there is no evidence that the species has ever nested in the state. Migration begins to bring in the wintering population around the first of October, although usually the species is not present in large numbers until the latter part of the month. Most of our scaup are gone by early April.

AMERICAN GOLDENEYE. *Bucephala clangula.* Pls. VIII, X

This is a large black-and-white duck with a dark green head (which appears black at a distance), a round white spot in front of the eye, and very white sides. The female has a gray body, a brown head, and a light collar around the neck.

The American Goldeneye is mainly a deepwater duck and therefore is seen most often on large lakes and on bays and lagoons along the coast. Although never observed in large numbers in Louisiana, it occurs regularly. It arrives in the northern parishes in late November but often does not reach the southern part of the state until well into December. Its early departure (late February in most cases) gives it the shortest stay of any of our winter resident ducks. Extreme dates of occurrence for the entire state are from November 14 to March 25.

BUFFLEHEAD. *Bucephala albeola.* Pls. VIII, X

The Bufflehead, or "butterball," is a small duck (about the size of a teal) that suggests a miniature American Goldeneye. Instead, however, of a mere spot in front of the eye, the male has a triangular white patch extending from below the eye over the back of the crown. The female shows much less white on the body than does the male, and the dark head is marked only by an elongate white spot *below the eye.*

Like the preceding species, the Bufflehead most often frequents deep water, and hence it usually stays far out in the middle of a lake or bay, where it can be studied to advantage only with powerful binoculars or a small telescope. It seems never to occur in very great numbers even during its main period of residence with us, from early November to March (extreme dates are October 13 and March 20), yet such comparatively small inland lakes as False River, twenty miles northwest of Baton Rouge, may have 40 or 50 individuals wintering on them.

Explanation of *Plate VIII*

Ducks in Adult Winter Plumage

(Males in foreground when both sexes are shown)

1. Blue-winged Teal (p. 167). **2.** male Green-winged Teal (p. 137). **3.** male Cinnamon Teal (p. 168). **4.** Wood Duck (p. 170). **5.** male Canvasback (p. 174). **6.** male Redhead (p. 171). **7.** Ring-necked Duck (p. 172). **8.** male American Goldeneye (p. 176). **9.** Lesser Scaup (p. 175). **10.** Oldsquaw (p. 177). **11.** Bufflehead (p. 176). **12.** Ruddy Duck (p. 181).

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OLDSQUAW. *Clangula hyemalis.* Pl. VIII

It is seldom that the student of animal behavior can lay down hard and fast rules to which exceptions do not sooner or later arise. Until a few years ago this account might well have read to the effect that the Oldsquaw is an extremely rare winter visitor to Louisiana and that it is most likely to be encountered near the coast if not actually in the waters of the Gulf itself. The species is, to be sure, decidedly maritime in its habitat preferences, but in the last decade there have been more records at inland localities than at coastal ones. Moreover, there are now sufficient records each year to merit listing it as a rare to uncommon winter visitor from November 15 to sometimes as late as May 3.

Neither the male nor the female is likely to escape detection, for each has its own unique pattern of black and white or brown and white, and the two central tail feathers are greatly elongated and pointed, particularly in the male. The Oldsquaw is noted, especially in the far north, for its vocal accomplishments. The continuous chatter uttered by migrants moving northward over Canada in spring is said to have given rise to the bird's common name. Further allusion to its vociferous tendencies is found in the scientific name; the word *Clangula* is the diminutive of the Latin *Clangor*, meaning "noise."

Fig. 45. Harlequin Duck: male in foreground; female behind.

HARLEQUIN DUCK. *Histrionicus histrionicus.* Fig. 45

For the only record of this northern duck within our state, we must go back to April 1, 1837, when John James Audubon "saw a pair in perfect plumage" in the Southwest Pass of the Mississippi River delta. This event occurred on the trip that he and Edward Harris made from New Orleans to

Galveston in search of new birds along the Gulf Coast (see page 26). The adult male is bedecked with such a lively pattern of chestnut and blues and such bizarrely shaped markings of black and white that, in the opinion of many, only one North American waterfowl, the Wood Duck, exceeds it in beauty.

WHITE-WINGED SCOTER. *Melanitta deglandi.* Pl. IX

The scoters are primarily ocean ducks. Since no concerted attempt has ever been made to study our offshore waters to ascertain what kinds of birds are found there, this and the following two species may be more common than the few available records would indicate. Merely watching the open Gulf from the shore is not sufficient. The upwelling of cool waters makes the area bordering the continental shelf extremely rich in plankton, which is one of the main links in the food chain of the sea. Sea birds find there an abundance of their preferred items of diet. The continental shelf, except near the mouths of the Mississippi River, lies at a considerable distance from the Louisiana shore, in some places 150 miles out. Effective study of the offshore avifauna requires periodic excursions at different times of the year out to the edge of the continental shelf and few such trips have ever been made. Such a project would surely yield much valuable ornithological data.

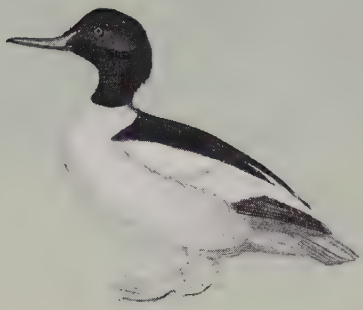
The three scoters, the males of which are nearly all black and the females nearly all grayish brown, may be distinguished as follows: Male and female White-winged Scoters each have a *white patch* in the wing, which neither of the other two species possesses. The male also has the eye partially encircled by a small white patch, which is very prominent in contrast to the black of the head. The females and juveniles sometimes show two white spots on their brownish faces (as in the Surf Scoter), but their *white wing patches* are diagnostic. The adult male Surf Scoter has a white forehead and nape; the adult female has two poorly defined light face patches (prominent in juveniles) and a dark crown. In the Black Scoter the male is solid black except for the

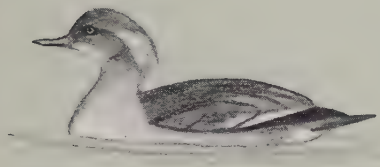
Explanation of *Plate IX*

Mergansers and Scoters

(Males above or in front; females below or behind)

1. Hooded Merganser (p. 182). **2.** Common Merganser (p. 183). **3.** Red-breasted Merganser (p. 183). **4.** White-winged Scoter (p. 178). **5.** Black Scoter (p. 179). **6.** Surf Scoter (p. 179).





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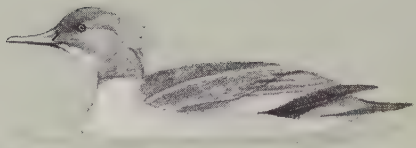

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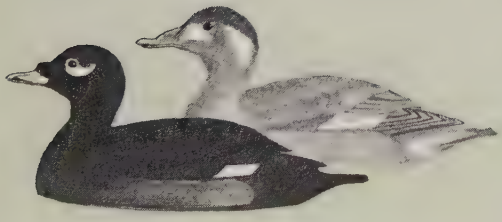

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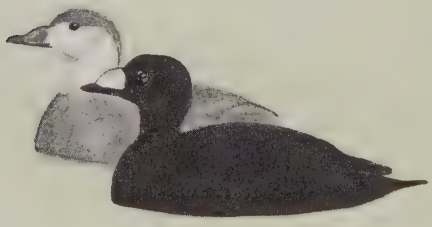

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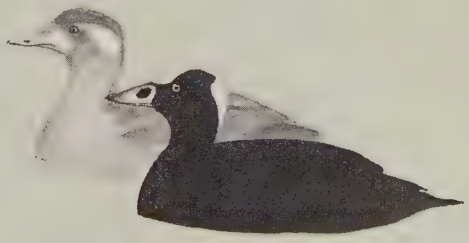

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orange base of the bill; the female has a dark crown, like the Surf Scoter, but instead of two light areas on the face, the *entire cheek* is light in contrast to the dark crown.

The eleven definite records of this species in Louisiana waters range from November 3 to April 17. The majority of these recrods are in late December.

SURF SCOTER. *Melanitta perspicillata.* Pl. IX

There are only four definite records for this species in Lousiana: one was shot near New Orleans, on March 20, 1890; another was obtained on the Gulf shore near Johnson Bayou, in Cameron Parish, on December 4, 1937; one was seen off Grand Isle, on December 26, 1950 (Christmas Bird Count); and a bird was killed near the south shore of Lake Borgne, on November 29, 1952. The Johnson Bayou and the Lake Borgne specimens are now preserved in the Louisiana State University Museum of Zoology. But, as noted in connection with the White-winged Scoter, the offshore waters, which all scoters prefer, have never been adequately studied. All three species of scoters are doubtless much more numerous along the shores of the Gulf than the few actual records of them would indicate. Characteristics useful in the field identification of the present species are given in the preceding account.

BLACK SCOTER. *Oidemia nigra.* Pl. IX

The Black or "American" Scoter, like the preceding species, has been identified only four times in Louisiana: one was shot on Lake Catherine many years ago and was apparently once preserved in the Gustave Kohn Collection, although the specimen cannot now be found in the remainder of that collection at Tulane University; a female was taken by a hunter near Labranch, in St. Charles Parish, on November 11, 1941; 75 individuals were observed riding the waves of the Gulf, just off Holly Beach, in Cameron Parish, on April 15, 1938; and a female was found dead on the Rockefeller Refuge, in October, 1953. The head, wing, and foot of the Labranch specimen and the entire skin of the bird from the Rockefeller Refuge are preserved now at the Louisiana State University Museum of Zoology. Field marks for this species are discussed under the White-winged Scoter.

MASKED DUCK. *Oxyura dominica.* Fig. 46

The Masked and Ruddy Ducks are members of the subfamily Oxyurinae, which includes only eight species, most of which are found in the southern portions of the world. They differ markedly from the diving ducks and the other subfamilies of Anatidae in a number of salient features (see figure 38). The tail feathers are stiff and spikelike and often held upright; the "nail" of the bill is strongly hooked downward at the tip and is sharply pointed; the legs are placed far to the rear of the body, even more so than in the mergansers, making it very difficult for them to walk on land; and their necks are thick and relatively short, drastically different in proportions to those of other ducks.

The Masked Duck has been recorded less than a dozen times in the United States and only once from Louisiana—on December 23, 1933, when a female

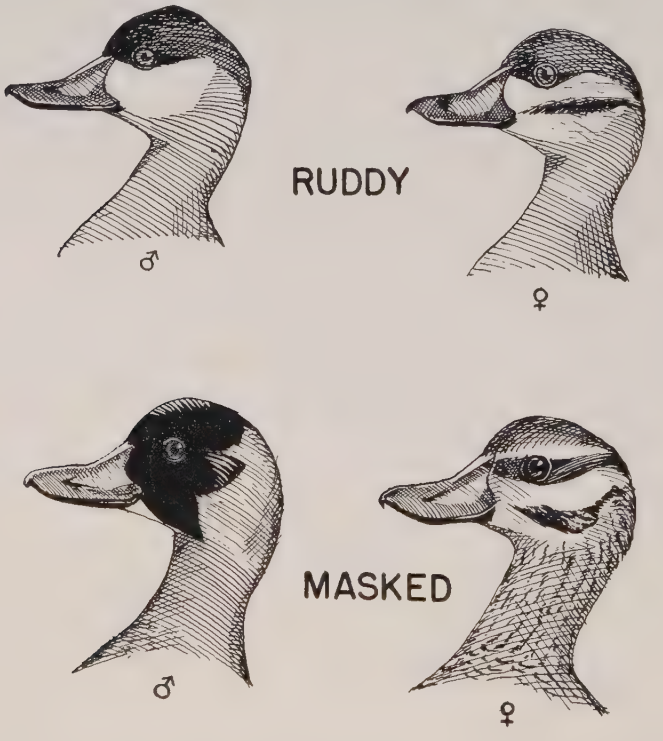


Fig. 46. Heads of male and female Ruddy Duck and Masked Duck. The symbol ♂ denotes male, ♀ female.

was shot by a hunter a few miles south of Lake Charles. The Masked Duck is closely related to the Ruddy Duck and resembles it in appearance. As in that species, the tail feathers are stiff and are often held perpendicular to the body. The male has a black mask and a prominent white patch in the wing; the female has *two* black streaks on the creamy cheeks while the female Ruddy Duck has only one. The normal habitat of the species is in the West Indies and Mexico and from there southward into South America.

RUDDY DUCK. *OXYURA JAMAICENSIS.* Pl. VIII; fig. 46

These interesting little ducks, which are often seen in great rafts, are abundant in some sections of the state in winter. False River, a lake formed by a meander cutoff of the Mississippi River above Baton Rouge, in some years has had a Ruddy Duck population estimated at 10,000 individuals. The species is easily recognized by its short, stiff tail feathers, which are generally held perpendicular to the body and furnish the basis for the colloquial name, "stiff-tail." Another common name heard frequently is the "God-damn," a blasphemy that is said, according to one explanation, to have originated in market-hunting days. Not infrequently in plucking the feathers of the back, which are deeply anchored, the market hunters would tear the skin before the feathers came out. This would expose the flesh, which, on contact with the air, turned black and rendered the bird less attractive for market display. This tearing of the skin frequently prompted the expletive noted above, and before long the words were in general use as a name for the bird itself.

Another version of the interesting but profane colloquial name is that given by Stanley Clisby Arthur: "In 1428 when Joan of Arc raised her white banner sprinkled with golden fleurs de lys against the English, the word *godons* (*God damns*) was used by the maid and her French soldiers to denote the English soldiers—this because the rough, fighting, red-uniformed English were continually using the expression . . . . Therefore, in the early days anything that wore a red coat was a 'God damn' to the French and, when the early French settlers found a little duck in Louisiana wearing a red coat, it was baptised by the profane name it is best known by today."

The Ruddy Duck and the Oldsquaw are the only two North American ducks with distinct winter and breeding plumages. When the Ruddies first reach us in October they are brownish gray in color. The male has a dark cap and prominent white cheeks; in the female the cheeks are a dirtier white and are crossed by a line beneath the eye. As spring approaches, the males begin

to take on their breeding plumage, in which the back, breast, and neck become a rich ruddy-red and the crown jet-black. When the last of the males leave us in late April or after the first of May, many are in full breeding plumage. The species nests mainly in central and western United States, northward to central British Columbia and northern Manitoba.

HOODED MERGANSER. *Lophodytes cucullatus.* Pls. VII, IX; p. 163

The mergansers are the so-called "saw-billed ducks" that make up the subfamily Merginae. The bill is long and very slender and is edged above and below by a row of "teeth" or serrations. From this fact stem many of their colloquial names—"saw-bill," *bec-scie* or "bexie," and others. Because they feed largely on fish, they are also called "fish ducks" and are seldom shot for food. They catch their prey by diving and pursuing it under water, an art at which they are greatly adept. Mergansers float with a considerable part of their bodies submerged and do not seem to mind getting their tails wet, as do the dabbling ducks, which hold their tails high out of the water (see figure 38).

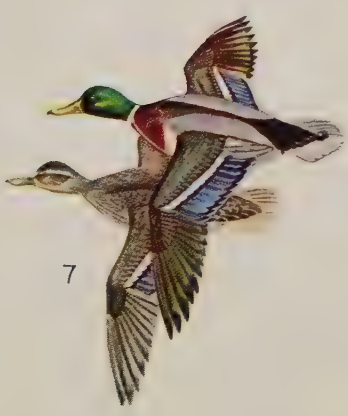
The Hooded Merganser is a moderately common winter resident and an uncommon breeder in Louisiana. Like the Wood Duck, it nests in tree cavities in the wooded swamplands, laying eight to twelve white eggs. The male is readily distinguished by its large white crest on an otherwise black head and neck, as well as by its black upper parts and brownish flanks. The female has a dark head and neck and a reddish-buff crest, which separate it from the other female mergansers. Despite the fact that the species is known to breed in the state, there are no definite records of its occurrence in the months of July, August, September, and October. This wide seasonal gap is paradoxical. Surely it must be due in some measure to a failure on the part of local ornithologists to record observations in these months.

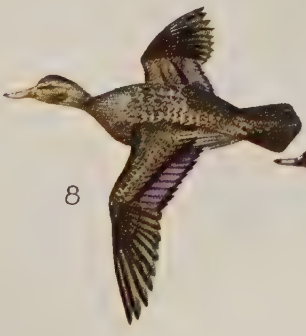
Explanation of *Plate X*

Ducks in Adult Winter Plumage

(Males in foreground when both sexes are shown)

1. Canvasback (p. 174). **2.** Redhead (p. 171). **3.** American Goldeneye (p. 176). **4.** Lesser Scaup (p. 175). **5.** Ring-necked Duck (p. 172). **6.** Bufflehead (p. 176). **7.** Mallard (p. 159). **8.** Black Duck (p. 165). **9.** Gadwall (p. 166).





R. E. Tucker

COMMON MERGANSER. *Mergus merganser.* Pl. IX

The long, white body and green head make the male Common or "American" Merganser quickly separable from other mergansers. The male of the Red-breasted Merganser has a reddish breast, a distinct white collar between the breast and the green head, and a scraggly crest. The females of the two species are quite similar, and one must study them closely in order to identify them with certainty. The female Common Merganser has a distinctly reddish head, a prominent white throat, and a clear white breast. The female Red-breasted Merganser has a paler reddish head and a hind neck that appears brownish in the field; this color blends into the white patch of the throat and foreneck instead of being clearly defined as in the other species.

The Common Merganser is a rather rare visitor to coastal Louisiana from late October until early May, occasionally to as late as June 3. In the North and East it is considered more of an inland or fresh-water bird than is the Red-breasted. Quite to the contrary in Louisiana, all but two of the records to date for the Common Merganser are from salt- or brackish-water situations, whereas the Red-breasted Merganser has often appeared on our inland lakes. A female Common Merganser was seen by Horace H. Jeter on Cross Lake, near Shreveport, on January 1, 1953, and another female appeared on City Park Lake, in Baton Rouge, on December 7, 1954. The latter bird provides the only record for the species in the Baton Rouge area.

RED-BREASTED MERGANSER. *Mergus serrator.* Pls. VII, IX

This particular *bec-scie*, as all mergansers are called in southern Louisiana, is mainly a bird of the coastal waterways, moderately common from the last part of October until the first of May or even later. It is especially numerous in Barataria and Vermilion Bays, in Lake Borgne, and in the Chandeleur Sound. It has probably always been much less common on inland fresh-water lakes, but this seems to have been particularly true in the last twenty years. I counted over 100 individuals of this species on False River on December 13, 1934, but in more recent years I have seen it there only occasionally and in very small numbers.

The male Red-breasted Merganser has a conspicuously-crested, green head that is separated from the dull reddish breast by a white collar. This combination of characters readily distinguishes it from the male Common Merganser, which is green headed but immaculate-white or pale pinkish white on the entire breast and along the sides. The females of the two species are, however,

much more difficult to separate. In each the head is reddish, but the two differ in the prominence of the white on the throat and at the base of the neck. In the Common Merganser the white throat stands out in sharp contrast to the reddish areas of the head and neck. In the present species the reddish parts of the head and neck blend with the white of the throat and foreneck.

HAWKLIKE BIRDS

Order *Falconiformes*

THIS ORDER of birds in Louisiana contains four families: Cathartidae, the American vultures; Accipitriidae, the kites, hawks, and their allies; Pandionidae, the Osprey or "fish hawk"; and Falconidae, the caracaras and falcons. Twenty-three species are represented on the state list.

Although now treated as two separate orders, the hawklike birds and the owls were long regarded as members of a single, monophyletic order—the Raptores, or the so-called "birds of prey." There are indeed certain striking similarities that suggest close kinship between them. Both, for example, have powerful, grasping toes with well-developed talons. But, as a matter of fact, hawks and owls are really much more closely related to various other kinds of birds than they are related to each other. Consequently, we now place them in separate orders rather far apart. This more recent treatment is based on careful anatomical studies of all the body organs and the entire musculature and skeletal structure, which disclose many dissimilarities and point to an independent origin of the two groups. The likenesses between them are merely expressions of the principle that zoologists refer to as evolutionary convergence or the development of like structures in two unrelated groups as adaptations to similar ways of life.

Convergence can be, and often has been, the cause of erroneous interpretations of relationship. Thomas Jefferson, who was quite a well-informed paleontologist for his day, described a fossil claw as probably belonging to a giant, extinct carnivore, only to have the French zoologist, Cuvier, correctly point out that the claw was from an extinct ground sloth. Similar mistakes would be made more frequently if we always relied, as did Jefferson, on single characters. Woodpeckers and creepers both have stiffened tail feathers, which

they hold against the tree trunk as a support; but despite this similarity in structure, these two groups of birds are quite distantly related, as we see from their other characteristics. Terns and kingfishers have similar bills that are long and pointed and also flattened laterally, and each gets its fish food by plunging into the water, but these similarities in bill structure and habits are again examples of convergence.

It is thus apparent that conclusions regarding the relationship of one group of animals with another must always be made with caution and, wherever possible, on numerous lines of evidence, to avoid the pitfall into which we may be led by adaptive convergence. Ornithologists studying probable relationships of two or more groups of birds now explore all avenues of evidence, to the extent of comparing nesting habits, song patterns, behaviorisms, and even ectoparasites, in addition to anatomical and physiological characteristics. Such methods usually reveal an aggregate of characters that reflect true relationships and show us, as in the case of the hawks and owls, errors in old concepts.

The Vulture Family: *Cathartidae*

Vultures are commonly called "buzzards," which is an unfortunate colloquial name. The word "buzzard," at least on the basis of first usage, applies properly to the large, "broad-winged hawks" of Europe. Early British settlers gave American birds the names of birds back home that our birds seemed to resemble. The robin was so named simply because early New England settlers thought the American bird was related to their well-known "Robin Redbreast." And so it was with the vultures; they must have suggested the familiar birds of prey that Europeans called "buzzards." Actually, Europe has no representative at all of the New World Vulture family, which is limited exclusively to the Western Hemisphere.

Vultures are important to us as sanitary agents. They are quick to clean up the remains of dead animals along our highways. In Charleston, South Carolina, they used to come down into the city streets, as they do in Mexico

today, to perform a real service in increasing the cleanliness of the community. I can hardly imagine what Mexican villages and towns would be like without these birds, for these places are not usually equipped with any sort of street cleaning department. More recently vultures were thought to be the principal agent in the spread of anthrax, or hog cholera, which probably accounts for their still being outlawed in Louisiana. This idea was disproved by careful experiments made by William H. Dalrymple, Louisiana State University's eminent and beloved scientist, who made many contributions of economic importance to our state up to the time of his death in 1925.

The early French naturalist, M. Le Page du Pratz, who spent sixteen years in Louisiana and who in 1758 published an account of his experiences and observations in this country, called attention to the economic value of the vulture as an agent of sanitation when he wrote: "The Spaniards forbid the killing of . . . [vultures] under pain of corporal punishment; for they do not use the whole carcass of the buffaloes which they kill, those birds eat what they leave, which otherwise, by rotting on the ground, would according to them, infect the air."

Great debate still centers on the question as to how vultures find their food, some arguing that it is by their sense of smell, others, by sight alone. The general belief now is that they find it mainly by their eyes, but that the olfactory sense is employed to some extent, especially by the Turkey Vulture.

Vultures build no nests but simply lay their one to three large, blotched eggs in stumps, in hollow trees, or under logs. The young are born naked, but soon become covered with a white or buffy down. Aside from a hissing and grunting sound made at the "nest," or when otherwise excited, the young and the adults alike are voiceless.

TURKEY VULTURE. *CATHARTES AURA.* Fig. 47; p. 189

Probably the majority of people do not realize that we have two kinds of "buzzards" in Louisiana, despite the fact that they are both almost daily in view to one who is outdoors. Indeed, from shortly after sunrise to near sunset there are few times one cannot scan the sky and see one or more of these graceful creatures gliding on outstretched wings. The two species can be distinguished at a glance, almost as far away as they can be seen. Try making a game of it! Here are the features to look for: in the Turkey Vulture (1) the long, pointed wings are gracefully arched and are bordered all across the rear under surface

by silvery gray; (2) in flight the wings are held above the horizontal, forming a dihedral (the wings of the Bald Eagle, which resembles a vulture in the air, form no dihedral); (3) the tail is relatively long, protruding from the body in flight at least twice as far as the neck and head; (4) the wings are seldom flapped except on the "take-off"—the bird will sometimes soar for hours without beating a wing; and (5) the head, like that of the "Thanksgiving turkey," is featherless and red in color. In contrast, in the Black Vulture (1) the shorter, straight-edged wings have white patches toward the squarish tips; (2) the wings are held more on the horizontal; (3) the tail is short, hardly protruding beyond the feet, and no longer than the head and neck (in other words, the Black Vulture sticks out in front as much as behind); (4) the bird flaps regularly, seldom soaring more than a minute or so without beating its wings; and (5) the skin of the naked head is black.

FIG. 47. Two vultures in flight: Turkey Vulture on left; Black Vulture on right. The distant silhouettes call attention to the dihedral in the wings of the former and its absence in the latter.

Turkey Vulture

ALLAN D. CRUICKSHANK

Osprey in Flight ALLAN D. CRUICKSHANK

The Turkey Vulture is a common permanent resident throughout the state, except in a few coastal situations, and there are nesting records as early as March 28. The eggs are usually two in number and are chalky white, heavily blotched and spotted with reddish brown and dark chocolate-brown. The eggs of the Black Vulture differ from those of the present species in having a slightly greenish tinge to the ground color and in being much less profusely marked with brownish spots.

BLACK VULTURE. *Coragyps atratus.* Fig. 47

The Black Vulture, sometimes called the "carrion-crow" but more often simply "black buzzard," is common in Louisiana the year around, except in the coastal marshes where it is often absent. In the southern part of the state it sometimes seems to be commoner than the Turkey Vulture, although I doubt that there is actually much difference in the relative abundance of the two species. The Black Vulture is more gregarious and therefore is seen in larger groups. The distinguishing differences between the two species are discussed in detail under the Turkey Vulture.

The Hawk Family: *Accipitriidae*

Representatives of this family in Louisiana fall into three fairly distinct categories: the kites and "accipiters" or short-winged hawks; the "buteos" or broad-winged hawks; and, finally, the harriers (one species, the Marsh Hawk). The kites are long-tailed, long-winged birds that superficially resemble the falcons (page 209). The "accipiters" have long tails but short, round wings. The "buteos" are characterized by broad, round wings and broad, round tails. A mental image of three composite silhouettes, each representing one of these categories, is a highly useful aid in accurate field identification (see Plates XI and XIV and figure 48). The kites of regular occurrence in Louisiana and the "accipiters" are generally woodland species. The latter, especially, are swift

fliers that dart in and out among the trees. The "buteos" are most often seen soaring on outstretched wings with their broad, rounded tails widely spread or else perched quietly in isolated trees in roadside pastures and fields. Our one species of harrier, in contrast, flies low just over the top of grassy fields and marshes.

FIG. 48. Flight silhouettes of three categories of hawks: accipiter or "blue darter" (top); buteo or "broad-winged" hawk (middle); falcon (bottom).

Intelligent people should make a real effort to learn how to identify the different hawks. The vast majority of hawks have been proven over and over again by scientific investigation to be extremely beneficial to man. But, unfortunately, most people subscribe to the principle that "a hawk is a hawk" and that *all* hawks are murderers of game and poultry. This absurd and unintelligent prejudice is often voiced by sportsmen and by farmers, despite the fact that hawks feed on rodents, which eat the eggs and young of game birds, destroy crops, and spread diseases inimical to man. Facts and figures seem to do little good in correcting false impressions regarding our birds of prey. I know a farmer, though, who told me of shooting a "chicken hawk" as it flew away from his barnyard with what he was certain was a young chicken. When he walked over to examine the dead body of the supposed culprit, he found in its talons a large rat! Henceforth this particular farmer was a hawk conservationist.

For the benefit of sportsmen, especially those in the South, only one reference need be cited to prove the value of hawks—namely, the results of the famous Cooperative Quail Investigation sponsored jointly by a group of sportsmen and the U. S. Fish and Wildlife Service. The final report of the study, which lasted several years, listed the enemies of the Bobwhite in the order of their importance. First was the fire ant, which gets into the eggs at pipping time and kills the young about to hatch. Second on the list was the Cotton Rat, our commonest native small mammal of fields and thickets. Far down the list was casual mention that a few kinds of hawks *sometimes* catch Bobwhites. The report demonstrated, however, the important role that hawks perform in keeping small rodents, like the Cotton Rat, in check. These animals reproduce prodigiously, and were it not for the fact that their numbers are continually being decimated by the birds of prey, they would literally overrun the countryside, destroy our crops, and possibly eliminate our ground-nesting birds such as the Bobwhite.

WHITE-TAILED KITE. *Elanus leucurus.* Pl. XII

There is only one positive record in Louisiana of this kite, an individual shot by George E. Beyer on the bank of the Mississippi River opposite Kenner on October 11, 1890. There is a second record, but one concerning which there is justifiably some doubt—an individual reportedly seen by me near Monroe on November 2, 1930. Although I was positive of the identification at the time, I now believe this record should be disregarded.

The species has been known to breed in three widely separated areas—in California, in Texas and Oklahoma, and in Florida. Adults may be easily recognized by the white under parts, by the pale gray upper parts and the blackish patches to the fore part of the wings, and by the white tail from which the species derives its name. The food of this beautiful kite consists mainly of insects and small rodents.

SWALLOW-TAILED KITE. *ELANOIDES FORFICATUS.* Pl. XI

Few birds possess the graceful beauty of the Swallow-tailed Kite. Unfortunately, it is now only a rare summer resident (extreme dates: March 5 to September 3) within the borders of our state and thus not likely to be encountered, except by one who goes in search of it. The most likely areas in which to find it are the Pearl River swamp in southeastern Louisiana and the Tensas swamp country of the northeastern part of the state, although it occasionally appears elsewhere. A pair possibly nests near St. Francisville, for two are now seen fairly regularly each spring along Alexander Creek by residents of that area.

The Swallow-tail is a medium-sized hawk that is black above and white below. The tail is deeply forked, the outer tail feathers being about eight inches longer than the central ones. In flight it has an ease and agility almost unparalleled among birds of its size. Its food consists almost entirely of snakes, frogs, snails, and aquatic insects. The nest of sticks and twigs interspersed with moss and leaves is placed near the top of a tall tree in swamps or along a forest river. It has only a slight depression to hold the two white eggs, which are blotched with brown.

MISSISSIPPI KITE. *ICTINIA MISISIPPIENSIS.* Pl. XI

There is hardly anything more lamentable than the killing of one of these beautiful hawks simply because it happens to belong to a group of birds among which a few are destructive. By the same logic, it could be argued that "since some men are murderers, all men are murderers." As a matter of fact, no bird could be less obnoxious and more beneficial than the Mississippi Kite. Its diet is made up almost entirely of insects, mainly grasshoppers, cicadas, and dragonflies. The species is readily identified by the sharp contrast of its slate-colored upper parts, black-tipped wings, and black tail with its pearl-gray head and breast. In shape it resembles the Sparrow Hawk, a falcon, but is fully three times as large; and no falcon has a black tail. When soaring it will often wheel

around and reveal another good field characteristic, a whitish streak along the back side of the wings. The brownish immatures are heavily streaked below and have a few indistinct, light bands across the dark tail. It is best for the beginner not to record immature Mississippi Kites except when they are seen in the company of adults.

The species is a fairly common summer resident in the deciduous forests of Louisiana, being especially numerous in the batture areas adjacent to the Mississippi River, from below New Orleans all the way to the Arkansas border, as well as along other large streams that are bordered by cottonwoods. There it builds its platform nest of sticks and grasses, usually at a considerable height. The normal clutch consists of one or two plain white eggs.

The Mississippi Kite ordinarily arrives in late April (rarely as early as March 15) and usually departs by the middle of September, although sometimes a few are seen in southeastern Louisiana in the fall months.

SHARP-SHINNED HAWK. *ACCIPITER STRIATUS.* Pl. XI

The habits of this and the following species, which are both commonly called "blue darters," constitute virtually the entire basis for the bad reputation of hawks in general. The two species are the "gangsters" of their tribe. Male Sharp-shinned Hawks feed almost exclusively on small birds; the females, which, as in all hawks, are larger than the males, sometimes catch Bobwhites and even small chickens.

Even though not much of a case can be made for the protection of "blue darters," people should learn to distinguish these two species in order that none of the beneficial varieties of hawks be killed by mistake. Sharp-shinned and Cooper Hawks are not at all difficult to identify and consequently there is no excuse for an intelligent person killing a beneficial species of hawk. As is implied by their colloquial name of "blue darter," both the adult Sharp-shinned and adult Cooper Hawks have a great deal of bluish in their plumage and fly with a very swift, dashing flight that sends them in and out among the forest trees; they are not often seen soaring in the open. Small birds "freeze" in panic at the sight of one of these hawks, for it seems that nature has taught the birds that headlong flight is surely the best way to get caught. I have often stood in a wood watching an active band of warblers, kinglets, and other small birds in a treetop and suddenly, on the appearance of a "blue darter," lost sight of every one of these lively little creatures. Then, by close scrutiny with binoculars, I would be able to find birds sitting absolutely motionless here and there in a cluster of leaves or close to a limb or tree trunk. After a few minutes,

however, the little birds would resume their activities as if nothing had happened to bring them perilously close to death.

The Sharp-shinned Hawk breeds sparingly in the state, but actually there are few records of its nest having been found here, and there is still no record of the species anywhere within our borders in the month of July. In early fall, however, migrants appear from the North, and the species is then moderately common until the following April.

The male Sharp-shinned Hawk is about eleven inches in length, while the female averages close to fourteen inches. Adults are bluish gray above, except for the top of the head, which is black; the throat is white with fine black streaks; and the breast and belly are white, heavily *barred* with pale rufous. The square tail is ashy gray with blackish crossbars and a white tip. Immatures are brownish above and heavily *streaked* longitudinally with ochraceous-buff below. Comparative field marks are discussed in the following account of the Cooper Hawk.

The nest, which is generally placed high in a tree crotch, is made of sticks and rootlets, and lined with grasses, leaves, and other fine materials. The usual complement of four eggs is sometimes laid as early as the first week of March. The nearly round eggs are bluish white, blotched with numerous shades of brown that render them among the most attractive of all bird eggs.

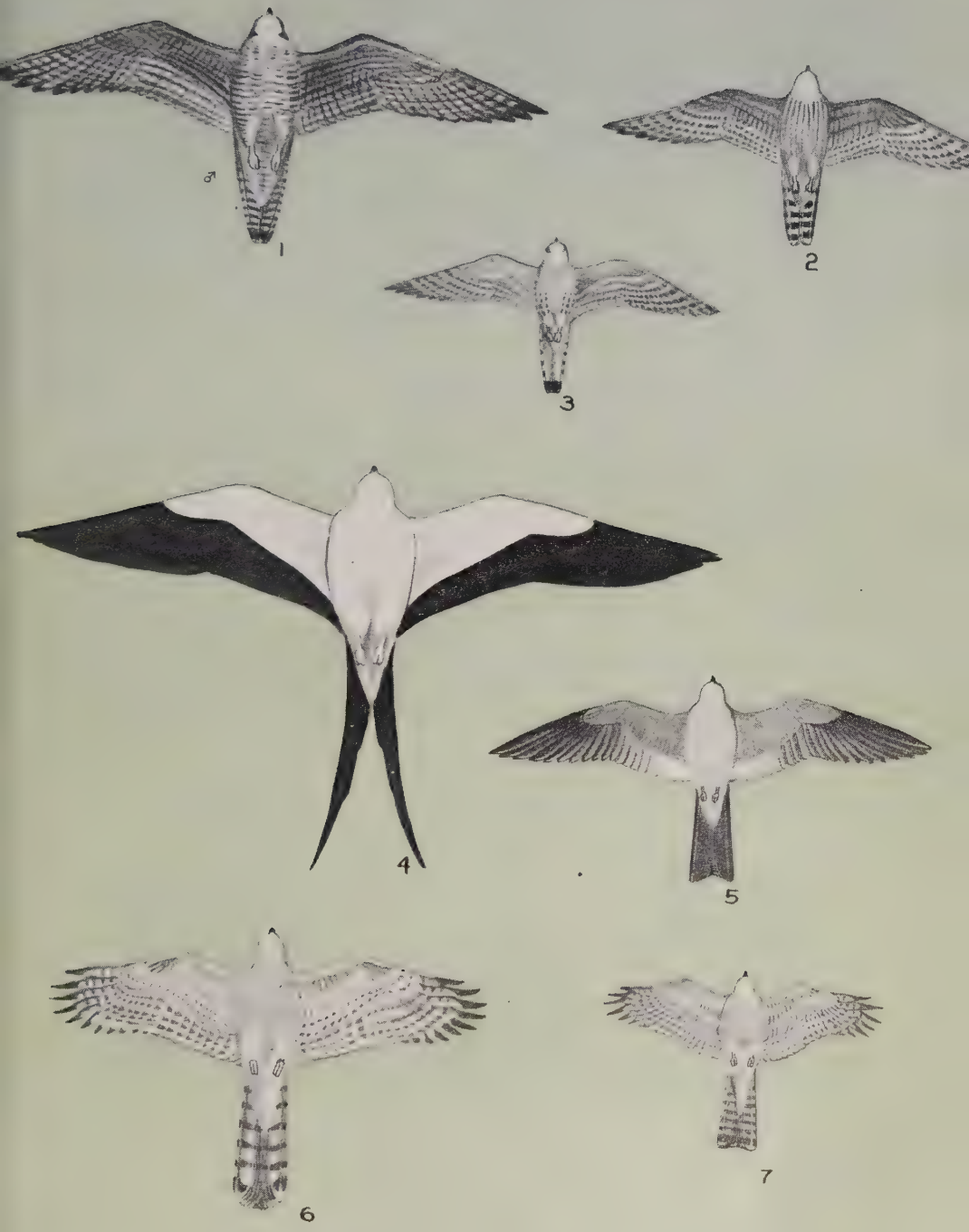
COOPER HAWK. *Accipiter cooperi.* Pl. XI

This destructive hawk, which, like the preceding species, is generally known as a "blue darter," is a moderately common permanent resident. Sex for sex, it is larger (males fifteen and one-half inches in total length; females, nineteen inches) than the Sharp-shinned Hawk, but since female hawks are larger than males, a female Sharp-shinned may sometimes approximate a male Cooper Hawk in size. By the same token, a female Cooper Hawk is several times as large in body bulk and seven or eight inches longer than a male Sharp-shinned; hence these two are easily distinguished by size alone. But

Explanation of *Plate XI*

Adult Hawks Viewed from Below

1. male Peregrine Falcon (p. 210). **2.** female Pigeon Hawk (p. 211). **3.** male Sparrow Hawk (p. 212). **4.** Swallow-tailed Kite (p. 194). **5.** Mississippi Kite (p. 194). **6.** female Cooper Hawk (p. 196). **7.** male Sharp-shinned Hawk (p. 195).



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when an accipiter circles overhead or otherwise shows the shape of its tail, it then most clearly reveals its specific identity—a Sharp-shinned has the end of the tail square; the tail of a Cooper Hawk is rounded or graduated.

Immatures of both species are brownish with a streaked breast. They can be distinguished from other hawks by their accipitrine shape and manner of flight, and from each other by the shape of the tail.

The Cooper Hawk usually builds its nest of sticks in the crotch of a tree, twenty-five to thirty feet up. The three to six eggs are pale, bluish white when laid but soon fade to dirty white and are often considerably nest stained by the time they hatch.

RED-TAILED HAWK. *Buteo jamaicensis.* Pl. XIII; figs. 49, 52

The Red-tailed Hawk is the first of the "buteos," the hawks with particularly broad wings and broad tails. All the "buteos" are highly adept at soaring and therefore are frequently observed on outstretched wings high in the sky. This species is a permanent resident, rare in summer but abundant from early October until late March. It is the hawk most often seen perched in trees and on telephone poles along our highways. Since it has little wariness about it, countless numbers are shot each winter by gunners who do not seem to realize that they are eliminating a highly beneficial bird protected by state law, in addition to violating another statute by shooting a gun from a public highway. The large buteos, such as the present species, feed almost exclusively on small rodents—Cotton Rats, Rice Rats, Harvest Mice and feral

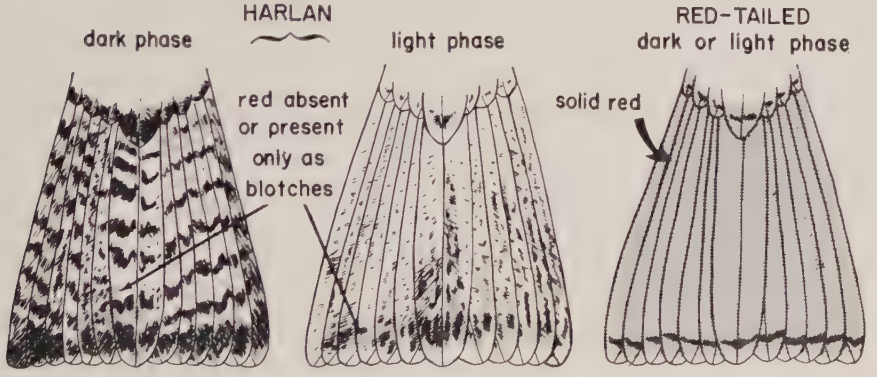

Fig. 49. Tail patterns in the Harlan Hawk and the Red-tailed Hawk.

House Mice. Sixty-five stomachs of Red-tails that were examined one winter at Baton Rouge either held the remains of one or more of these rodents or else were empty. What better proof could be offered that Red-tails deserve protection?

The Red-tailed Hawk is the largest of our common buteos. Adults have the highly diagnostic red upper tail surface, visible when the bird wheels about in one of its soaring spirals. Immatures have a banded tail and a prominent black belly band, formed by a concentration of streaks on the lower under parts. The bird's call is a drawn-out squealing whistle that sounds somewhat like escaping steam. The species is a very rare breeder in Louisiana, except possibly in the extreme northern tier of parishes where it is found in somewhat greater numbers in summer than it is elsewhere. The nest is composed of sticks and twigs that form a platform in the fork of a tree, usually twenty-five to thirty feet above the ground. The two to four dull whitish eggs are sometimes irregularly marked with cinnamon-brown.

HARLAN HAWK. *Buteo harlani.* Fig. 49

Until rather recently the Harlan Hawk was regarded simply as a color phase of the Red-tailed Hawk, but now it is recognized as a separate species. It is like the Red-tail except that it is somewhat larger and the tail is never solid red above. The bases of the tail feathers are usually extensively white, giving the appearance of a white "rump," and such red as it often has in the tail is in very small blotches, patches, or streaks, along with a mottling of black, brown, and white. The melanistic or virtually all-black phase is not uncommon in the Harlan Hawk, but this is also true of the Red-tailed Hawk. A melanistic Red-tail, however, has a red tail, while a melanistic Harlan Hawk has a tail colored as described above.

The Harlan Hawk is of special interest to ornithologists of Louisiana, for it was at St. Francisville that John James Audubon shot the bird that formed the basis of the painting by which the species was first made known to science and

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Explanation of *Plate XII*

Adult Hawks Viewed from Below

1. White-tailed Kite (p. 193). **2.** White-tailed Hawk (p. 202). **3.** Ferruginous Hawk (p. 203). **4.** Harris Hawk (p. 203). **5.** Audubon Caracara (p. 210). **6.** light phase Swainson Hawk (p. 201). **7.** dark phase Swainson Hawk (p. 201).

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on which he bestowed the name of his good friend, Dr. R. Harlan. The specimen in question was only a migrant, since the species is now known to breed in Alaska and British Columbia. It winters extensively, however, in the central and lower Mississippi Valley and in Texas, arriving in Louisiana in early November and staying rarely until late March. The species is infrequently recorded, but it might prove to be not uncommon if a thorough census were made of our winter hawk population. It feeds almost exclusively on rats and mice, like other members of the genus *Buteo*.

RED-SHOULDERED HAWK. *Buteo lineatus.* Pl. XIII; fig. 50

This and the Red-tailed Hawk are the two birds of prey most often saddled with the name of "chicken hawk," despite the fact that both are very beneficial. As proof of the value of the present species, I need only mention that of 220 stomachs examined by the U. S. Fish and Wildlife Service, only *three* contained poultry and only *twelve* some kind of wild bird. Of the same 220 stomachs, no less than 142 contained mice or other small mammals; fifty-nine had snakes, lizards, or frogs; ninety-two, insects; seven, crayfish; two, offal; and fourteen were empty. Despite figures such as these, farmers and so-called sportsmen continue to shoot these useful birds on sight.

The Red-shouldered Hawk is mainly a woodland species, although it sometimes soars over open fields in the main province of the Red-tail. The call is a loud, piercing *kee-you*, a note often imitated by the Blue Jay. Adult Red-shouldered Hawks have a robin-red breast, reddish fore edge to the wing from the elbow to the wrist (hence "red-shouldered"), and *five* to *six* black bands on the tail separated by *narrow* white bands. The Broad-winged Hawk has *four* black bands separated by *broad* white bands. The immature Red-shouldered Hawk has heavy streaking all over the under parts, whereas in the Red-tail the streaking is on the lower belly. The general size and shape and the six to eight indistinct dark bars on the tail further distinguish the immature Red-shouldered from other buteos. In flight all Red-shouldered Hawks reveal a diagnostic light spot near the tip of the wing, a feature that no other member of the genus in Louisiana possesses.

The species is a common permanent resident throughout the state wherever persecution has not greatly reduced its numbers. The nest is built in a wooded area, usually twenty-five to fifty feet from the ground, in a tree crotch. The two to four dull white eggs are more or less splotched and sprinkled with various shades of brown.

BROAD-WINGED HAWK. *Buteo platypterus.* Pl. XIII

The Broad-winged Hawk is a locally common to uncommon summer resident in the heavily forested portions of Louisiana. It arrives in March, or rarely in February, and is generally gone by late October. Although some previous writers on the birds of the state have claimed that this species winters within our borders, there is actually no indubitable evidence of its ever having done so.

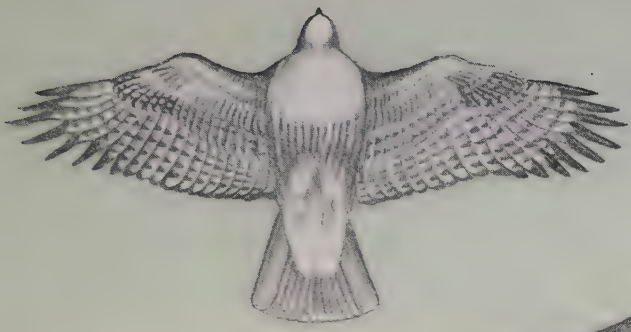
The Broad-winged Hawk is smaller than the Red-shouldered Hawk, has four wide black bands on the tail separated by wide white bands (see preceding discussion), and has the under parts heavily mottled and barred with dull brown instead of red. The immature is dark in general coloration, chocolate-brown above and buffy below with numerous, large, blackish spots. The immature Red-shouldered is a lighter brown above, and the streaks on the *white* under parts are less prominent. The most reliable field character separating the immatures, however, is the fact that the black and white bars on the tail of the Broad-wing are fewer and much broader. A specimen can be identified with complete certainty by examining the primaries or the main flight feathers. In the Broad-winged and Swainson Hawks only the outer three feathers are notched; in other buteos that are known to occur in Louisiana, four or more primaries are notched (fig. 50). The diagnostic features of the Swainson Hawk are given in the account of that species.

The Broad-winged, like the Red-shouldered Hawk, is a woodland species that only rarely catches small birds, for it feeds on rats, mice, reptiles, frogs, and, above all, insects. The nest is usually placed in the main crotch of a deciduous tree or on a horizontal branch next to the trunk when located in a pine tree. It is a poorly constructed assemblage of sticks, leaves, and bark. In most instances only two eggs are laid, which is, on the average, a smaller clutch than that of the Red-shouldered Hawk. Otherwise, the eggs of the two species are quite similar.

Explanation of *Plate XIII*

Adult Hawks Viewed from Below

1. light phase Red-tailed Hawk (p. 197). **2.** dark phase Red-tailed Hawk (p. 197). **3.** dark phase Rough-legged Hawk (p. 202). **4.** light phase Rough-legged Hawk (p. 202). **5.** Red-shouldered Hawk (p. 199). **6.** Broad-winged Hawk (p. 200). **7.** female Marsh Hawk (p. 206).



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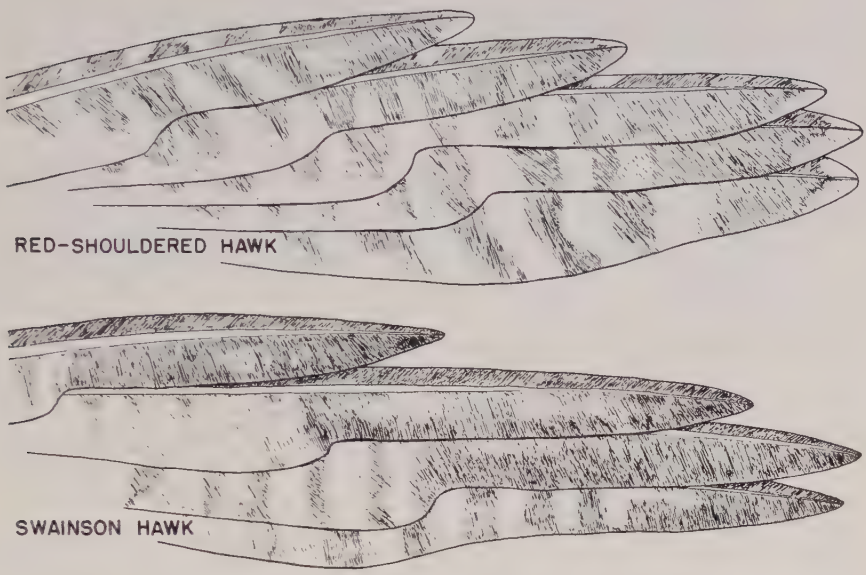

FIG. 50. Diagrams showing the four notched primaries in the Red-shouldered Hawk and the three in the Swainson Hawk. Of the buteos that occur in Louisiana, the Swainson and Broad-winged Hawks alone have only three notched primaries.

[SWAINSON HAWK. *BUTEO SWAINSONI.* Pl. XII; fig. 50]

There are only two reports of the occurrence of this Great Plains hawk in Louisiana—a presumed light-phased adult seen by Robert J. Newman on December 29, 1952, between DeQuincy and Kinder and a presumed melanistic individual seen by Horace H. Jeter on August 8, 1953, eight miles north of Shreveport. However, neither observation was completely satisfactory to the observers themselves; the first bird was seen too briefly and the second did not conform in certain minute particulars to descriptions or available museum specimens of the dark phase of any known species. For this reason I have not added the species to the state list. It would be surprising, however, if the species never occurred in the state, since it appears regularly in migration in eastern Texas and has been observed in winter in numbers in southern Florida. Possibly it has simply gone undetected among the host of "broad-winged" hawks that inundate our state each autumn.

In size the Swainson Hawk is close to the Red-tail, which it resembles somewhat. The adult Swainson in the light phase has a white throat and a wide *reddish-brown chest band.* The light-phased Red-tail has a whitish chest and band of dense, black spots *across the abdomen,*

and in both phases the tail is reddish on its upper surface. Another good field mark of the light-phased Swainson Hawk is the color of the under wing surfaces. The flight feathers (primaries and secondaries) are dark gray, while the wing linings are virtually all-white. In the Red-tail and other large buteos, the flight feathers are white or at least appear to be lighter in color than the wing linings. Dark-phased Swainson Hawks may have the wing linings slightly darker than the flight feathers, but the latter are always clouded, never white or whitish as in the melanistic Red-tail or Rough-leg. Immature Swainsons are dark brown above, buffy below, with fairly numerous streaks and spots. In the hand the species is easily distinguished, regardless of age and plumage variations, by observing that it has only *three* primaries notched. Other buteos, except the much smaller and differently colored Broad-winged Hawk, all have four primaries notched (fig. 50).

WHITE-TAILED HAWK. *Buteo albicaudatus.* Pl. XII

There is only one record in our state for this beautiful hawk from Texas, that of an immature taken on November 18, 1888, in southwestern Calcasieu Parish, not far from the Texas state line. The clear white under parts and white tail, with a black band near the tip, make the adults distinct from all other hawks of the United States. Juveniles are blackish, densely mottled below with white, and the tail is neutral gray with indistinct narrow bars of somewhat darker gray. Because of the apparent great rarity of the species in Louisiana, and because there are other similarly colored dark hawks, a sight or field identification of one of these dark-plumaged White-tailed Hawks could hardly be accepted as a record.

ROUGH-LEGGED HAWK. *Buteo lagopus.* Pl. XIII

The Rough-legged Hawk is a rare winter visitor to our state, less scarce in some years than in others. It breeds in the northern part of the continent from the Aleutian Islands, Alaska, and British Columbia across Canada to Newfoundland but never within the United States. It seldom reaches as far south as Louisiana until mid-December.

The duration of its sojourn in the southland is short, for it has been seen here only once after the last part of March. The species has a light and a dark phase. In the light phase the bases of the tail feathers are white, the belly is crossed by a broad black band, and the spread wings (from below) show prominent black "wrist" patches. In the dark phase the body is black but the tail is light with a terminal bar, and the flight feathers are decidely

whitish at their bases. Rough-legs have the habit of hovering in mid-air much more often than the other large hawks. Indeed, any time a large, broad-winged hawk is seen poised on spread wings, it should be closely scrutinized to determine if it is a Rough-leg.

FERRUGINOUS HAWK. *Buteo regalis.* Pl. XII

The Ferruginous Hawk is another bird of prey for which there is but one record in Louisiana. An adult individual in the light phase was observed at very close range, perched on a telephone post, near McCall, on January 14, 1938. This was in the winter of a great hawk invasion into our state; only one time since then, in the winter of 1952-53, have hawks appeared in nearly comparable numbers. In each of these winters there was a lamentable slaughter that took a toll of thousands of hawks, leaving alive tens of thousands of rats and mice that would have otherwise died.

The present species is a large, heavy-bodied buteo, which, in the light phase, is reddish above and white below with a whitish tail that has no terminal band. The dark phase resembles the dark phase of the preceding species, but the combination of the white under surface of the wings and the white, unbanded tail are adequate field marks.

HARRIS HAWK. *Parabuteo unicinctus.* Pl. XII

The Harris Hawk was named by Audubon from a specimen taken between Bayou Sara and Natchez, Miss. It has not been observed since in that area, although there is one other old published record—that of a bird killed in central-southern Louisiana. It is a large blackish hawk with conspicuous white near the base of the tail and with a white band at the end of the tail. The female and immature Marsh Hawks are brownish in color and have a white rump, but, unlike the present species, they show the white only on the upper surface (the white does not circle the tail). While the flight of the Harris Hawk is labored and straightaway, that of the Marsh Hawk is graceful and bounding. At perch the Harris Hawk shows chestnut patches on the wings and body, features that would immediately eliminate any of the black phases of foregoing species.

GOLDEN EAGLE. *Aquila chrysaëtos.* Pl. XIV; fig. 51

There are few records in Louisiana for this primarily western species. I suspect, however, that it is much more numerous than the available facts indicate. In the field the adult Golden Eagle appears uniformly black with white

at the base of the tail feathers. Immatures show more white at the base of the tail, some white in the wings, and a sprinkling of white on the body where the white basal portions of the contour feathers occasionally show through. Both young and old Golden Eagles are easily confused with the immature Bald Eagle, which lacks the white head and wholly white tail characteristic of adults of its species. Inexperienced observers should be very careful in attempting to distinguish between the two species. A specimen in the hand or a mounted bird can be told at a glance, since the Golden Eagle has the tarsi feathered all the way to the toes, and in the Bald Eagle the tarsi are bare (see figure 51). Unfortunately, since we can seldom approach a living eagle close enough to see the feathers on its feet, this is not a very useful field character.

Young Bald Eagles sometimes have a considerable amount of white in the wings and over the body and are hence less solid blackish brown. The bill of the Bald Eagle is fully twice the size of that of the Golden Eagle. Records of the Golden Eagle in Louisiana fall between October 8 and March 12.

BALD EAGLE. *Haliaeetus leucocephalus.* Pl. XIV; fig. 51

The Bald Eagle, the symbol of American freedom, is a bird that requires no introduction. Ever since its adoption by the founders of our country as the national emblem, its figure has adorned much of our money and all kinds of displays and posters of a patriotic nature. The Bald Eagle is a powerful and stately bird that fulfills most of the symbolic attributes assigned to it. Benjamin Franklin, however, in his usual great wisdom on all matters, was aware from the outset of one defect. He knew that the Bald Eagle is not averse to eating carrion, and because of this he argued for the adoption of that most magnificent of all North American game birds, the Wild Turkey, as the national bird. Despite the usual soundness of Franklin's opinions on nearly all matters, it is difficult to envision the portrait of a turkey on a quarter or five-dollar bill, much less on a national defense poster or a Marine Corps emblem.

The Bald Eagle's lack of disdain for carrion has been the main cause of its ill repute among livestock owners in some sections of the country and even here in our own state. Wolves or wild dogs, or often natural causes, bring about the death of a lamb or newborn calf. Later a Bald Eagle is seen feeding on the carcass and is given credit for the actual kill. As a matter of fact, the chief food of the Bald Eagle is fish, which it either catches itself or steals from the Osprey. Many times I have observed a Bald Eagle perched quietly on a dead snag on the side of a bay or lagoon, while an Osprey circled out over the water in search of a fish. Suddenly the Osprey would plunge downward,

hit the water with a terrific splash, and then reappear amid the spray with a fish in its talons. As the Osprey would begin to wing its way toward its favorite perch or its nest, the Bald Eagle would be seen to leave its lookout and to fall in behind the Osprey. Almost invariably when the eagle drew near, the Osprey would drop its fish, although I have never known an eagle actually to touch its victim. Generally the eagle follows the fish to the ground, but sometimes it may be seen to swoop down and pick the fish out of the air. When an eagle catches its own fish, it comes down in a terrific power dive but never strikes the water as does an Osprey. The descent ends just above the surface, and only the talons dip into the water to extract the prey.

Because fish are their favorite food, Bald Eagles are seldom found far from water, and their nests, which are massive structures of sticks that are added to from year to year, are usually built in trees along a shore. Mating takes place in late fall, and in our state the two dull white or pale bluish-white unmarked eggs are usually laid before Christmas. The young eaglets spend three months in the nest before they make their first flight. The full adult plumage, characterized by an all-white head and tail, is not acquired until after four or five

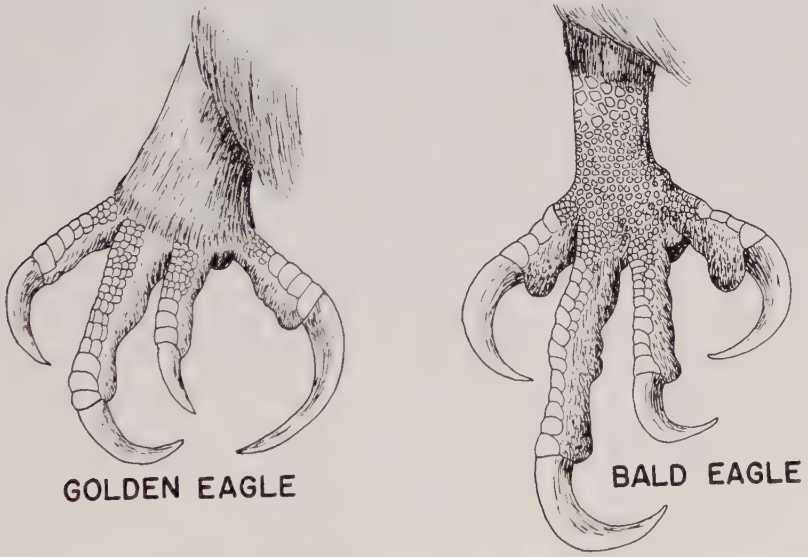

FIG. 51. Feet of the Golden Eagle and the Bald Eagle. In the Golden Eagle the feathering extends to the toes, while in the Bald Eagle the lower end of the tarsometatarsus is bare of feathers. This difference is particularly useful in separating immature Bald Eagles, which lack the white head and tail of the adult, from Golden Eagles.

years. In this interim period, the immature is not easily distinguished from the Golden Eagle (see preceding account).

Bald Eagles are fully protected by state and federal laws, and not even museums are allowed to collect specimens for exhibition purposes. The killing of one of them is punishable by a severe fine, by imprisonment, or by both. The Bald Eagle deserves all the protection it can get, for it is now apparently much less numerous than it was in former years. Its current status in Louisiana is that of a moderately common resident in southern Louisiana, uncommon elsewhere, as yet unrecorded anywhere in the state in June, and only rarely recorded in July, August, and September. Even in Florida, where the species is quite common as a breeding bird, records in summer are almost entirely lacking. The remarkable eagle-banding efforts of Charles L. Broley in that state finally solved the mystery of the bird's general disappearance in summer from the southern part of its range. As a result of banding 814 Bald Eagles in Florida between 1939 and 1946, he received reports of recoveries of 48 individuals, 10 in Florida and the remainder at some point *north* of Florida. More than a third of the birds were recovered at least a thousand miles away. From this evidence it was apparent that the Bald Eagles of Florida migrate *north* in late spring and summer. The virtual absence of the bird in Louisiana at that time is presumably explainable on the same basis.

MARSH HAWK. *Circus cyaneus.* Pl. XIII

The Marsh Hawk, or "marsh harrier," is a member of a distinct group of hawks that have slim bodies, long legs, and unusually long tails. The only representative of the group in North America north of Mexico is this species; and it is one of the easiest of all hawks to identify when seen cruising in a slow, bounding flight just over the top of a grassy field, conspicuously showing its white rump patch. The females and young males are brownish in color, and the adult males are pale gray.

Since the Marsh Hawk frequents fields, the general impression of hunters unfortunately is that it preys on the Bobwhite. As a matter of fact, the diet of

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Explanation of *Plate XIV*

Hawks Viewed from Below

1. adult Bald Eagle (p. 204). **2.** immature Bald Eagle (p. 204). **3.** adult Golden Eagle (p. 203). **4.** immature Golden Eagle (p. 203). **5.** Osprey (p. 208). **6.** Audubon Caracara (p. 210).

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the Marsh Hawk is made up of rats, mice, and sometimes rabbits. The species breeds principally in the northern states and in Canada and does not regularly reach Louisiana until the first week of September. After this time it is fairly common, especially in southern Louisiana in the vicinity of cane fields and marshes. It sometimes remains, however, until late in May, much later than other winter-resident hawks. The individuals seen in late spring may be migrants that have gone as far as South America and hence are taking more time to get back toward their breeding grounds in the North. A recent record of an adult female seen a few miles north of Jennings on July 28, 1954, more than likely represents a straggler.

The Osprey Family:

Pandionidae

The vast majority of birds possess characters or combinations of characters that leave little or no doubt as to their closest generic and family relationships. This is not true of the Osprey. Although comprising only a single species of nearly cosmopolitan distribution in the temperate and tropical regions of the world, the Osprey, because of its pecularities, has at various times been treated as a distinct suborder, family, or subfamily. Current opinion is still varied, but the consensus among specialists seems to be that the Osprey merits separation as a family. In its pterylosis it resembles the vultures, but in some of its other features its affinities are with the accipitrine hawks. From the latter, however, the Osprey differs in being wholly piscivorous and in having an entirely different foot structure, the latter being unquestionably an adaptation for grasping slippery fish. The thighs and basal portions of the tarsi are covered with short, densely-matted feathers, and the bare portions of the tarsi are extensively reticulate, that is, broken up into a multitude of polygonal plates. The fourth or outer toe is opposable, moving to the front or to the back, and the inner

surfaces of all the toes are profusely covered with sharp spicules. The claws are massive and long and equal in length instead of graduated in size from that of the hallux, the largest, to that of the outer toe, the smallest. In cross section the claws are rounded instead of convex above and concave below. This feature, along with their uniform size, is unique among hawks and hawk-like birds if not the entire class Aves (see figure 52).

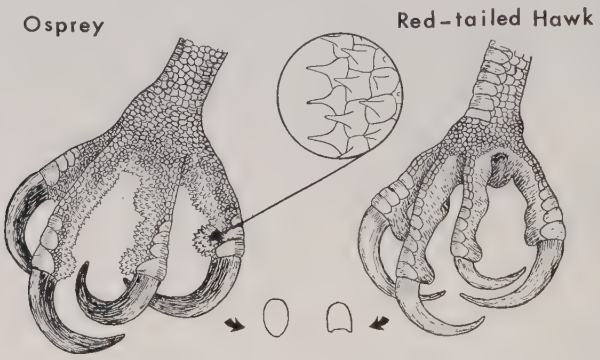

FIG. 52. Feet of the Osprey and the Red-tailed Hawk. Inset drawings show an enlargement of the spicules on the pads of the Osprey and the unique shape of its claws as seen in cross section.

OSPREY. *PANDION HALIAETUS.* Pl. XIV; fig. 52; p. 190

Ospreys, also called "fish hawks," are surprisingly uncommon and scantily distributed summer residents, probably much less numerous now than they were in former years. Only in April and again in September and October is the species observed with any regularity in places in the state where it does not breed. A few individuals nest along the coast and on the borders of some of our inland lakes, but the species is decidedly less common here than in other parts of the Gulf Coast region, as, for example, in Florida.

The Osprey has been severely persecuted by fishermen, simply because of its fish-eating habits. It never seems to occur to fishermen to inquire about the kind of fish eaten by such a bird before passing judgment on it. Is the bird's diet mainly game fish, is it made up of game and nongame species, or does it consist of nongame varieties only? Investigations show that, although all classes of fish are eaten by the Osprey, its frequent selection of predatory fish more than compensates for the game fish it consumes. Of course, an Osprey in the vicinity of a fish hatchery is an entirely different matter.

In the eastern part of the northern Gulf Coast region migrants arrive in February or March and sometimes individuals remain throughout the winter, but in Louisiana there was until recently no unquestionable record for the Osprey prior to April 2, or after November 12. On both November 26 and 28, 1954, however, one was seen a few miles north of Holly Beach, along the highway to Hackberry.

Superficially the Osprey resembles the Bald Eagle but is smaller; the under parts are white, instead of black as in the eagle; the white head has a prominent black line through the eye; and in flight the wings have a decided kink or "swept back" appearance and conspicuous black "wrist" marks when viewed from below.

The nest of the Osprey is a bulky collection of sticks and sod that is often added to annually until the resulting enormous structure is heavy enough to break down the tree in which it is built. Almost invariably three eggs, occasionally two and more rarely four, are laid. Many oologists regard them as the most attractive of all bird eggs, at least among the birds of prey. The ground color may be white, pinkish white, light pinkish cinnamon, or many other variable shades, heavily blotched and spotted with dark rich browns and bright reddish browns.

The Falcon Family:

Falconidae

Falcons are rather easily distinguished from other birds of prey. In flight they beat their long, pointed wings rapidly with powerful strokes. Their very long tails serve to separate them from buteos but not from accipiters. The family is represented in Louisiana by the Audubon Caracara, the Sparrow and Pigeon Hawks, and the Peregrine Falcon or "Duck Hawk." All except the first have a notch in the cutting edge of the bill near the tip. As a result the bill is "double hooked."

AUDUBON CARACARA. *Polyborus cheriway.* Pls. XII, XIV

The Audubon Caracara is a member of the falcon family but is aberrant in that it spends much time on the ground, where its small feet enable it to run with agility. It is also unlike its relatives in that it feeds extensively on carrion, along with the vultures. The latter, however, stand back at a respectful distance until the pugnacious caracaras have gained their fill.

The species is decidedly rare in Louisiana, having been noted only in the central-southern and southwestern parts of the state. Although presumably a permanent resident, it is still unrecorded in more than half the months of the year. There are reports of its nesting in northwestern Cameron Parish, but, to my knowledge, confirmation of this is lacking.

On the ground the black-capped head, white throat and upper breast, black lower breast and belly, and white basal portion of the tail of the caracara are diagnostic. In flight, the bird reveals prominent white patches at the end of the wings. The pattern of the outstretched neck, unusually long for that of a hawk, in combination with the wings, which are often held flat on the horizontal, gives it a cross-shaped appearance in the air.

PEREGRINE FALCON. *Falco peregrinus.* Pl. XI

The Peregrine Falcon, or "Duck Hawk" as it is often called, is an uncommon but fairly regular winter resident (from early September to early May) throughout most of Louisiana. As a breeding bird, though, it is extremely rare. Indeed, there is but one record of its nesting—that of a pair that built a nest in a hollow tree in the northeastern part of the state near Tallulah, where it was observed on May 11, 1942, by Roger T. Peterson.

The Peregrine is a powerful bird that can climb almost vertically in the air in order to get above its quarry. Once this is accomplished there is little the hapless creature being pursued can do to escape. The Peregrine dives and strikes its prey with its massive feet (Audubon called the species the Great-footed Hawk) with such force that death is usually instantaneous. It seizes the dead bird in mid-air, or, failing in this, follows the body to the ground to devour it.

The species is most common on our Gulf shores, where it finds an unlimited supply of food amid the clouds of gulls and terns, the myriads of sandpipers and plovers, and the hordes of ducks. The admission that it kills ducks will doubtless further prejudice hunters against this species, as well as against all hawks. A sportsman once told me, however, that he has experienced no

greater outdoor thrill than that of watching from his duck blind the spectacle of a "Duck Hawk" in pursuit of a brace of teal. It is precisely this sort of drama in the wild that makes the study of nature so immensely intriguing. The ducks killed by Peregrines are, I am certain, few in comparison with the number of ducks that die from eating lead shot on the bottom of ponds or from wounds as a result of shots fired by inexperienced hunters who shoot when ducks are well out of effective range.

The crow size of the Peregrine, the long, pointed wings, and the dark "mustache" patches on the sides of the face serve immediately to identify this fine bird of prey. Adults are dark bluish slate above and whitish below, heavily streaked with black. Immature birds are brownish above.

Although tree cavity nesting sites, such as the one near Tallulah, are not rare in that part of the bird's range where the terrain is flat, rocky ledges are preferred when available. The three or four handsomely-colored eggs are creamy white to pale pink, with numerous spots and fine dots of brilliant rich brown or reds, sometimes concentrated on one end.

PIGEON HAWK. *Falco columbarius.* Pl. XI

This small falcon is only a rare to uncommon migrant and winter resident that occurs here from the middle of September to the last of April, infrequently to May. Although it is seen nowhere in Louisiana in numbers, the species is observed most regularly in our coastal areas. Females and immatures, which are brown backed and heavily streaked below, greatly outnumber adult males among the individuals seen, because most of the latter go farther south. The males are bluish on the back with a heavy streaking of dusky below and with three or four black and an equal number of whitish bars on the tail. In color and pattern the species resembles the Sharp-shinned Hawk but has pointed, instead of rounded, wings and displays typical falcon, instead of accipitrine, wingbeat. The females and immatures resemble the Sparrow Hawk also but lack the rufous coloration on the upper parts and tail. The food of the Pigeon Hawk is made up mainly of small birds and insects.

There is a strong—and, in my opinion, ill-advised—movement underway among some ornithologists to change the name of the Pigeon Hawk to "Merlin" and the name of the Sparrow Hawk to "American Kestrel," in order that the American names for these two species may conform with the long-established designations for their European relatives.

SPARROW HAWK. *Falco sparverius.* Pl. XI

This little falcon occurs abundantly in Louisiana from mid-September until late April, and a small population remains to breed, especially in the pine woods sections. Sparrow Hawks may frequently be seen perched on telephone poles or telephone wires. The jerking motion of the tail when the bird is at rest is characteristic, as are also the male's bluish wings and reddish back and tail (which has a black terminal band). The female and immature birds have both the back and wings reddish brown, and the tail is crossed by numerous narrow bars instead of a brown terminal bar. The *reddish*-brown color alone will separate them from the Pigeon Hawk or Sharp-shinned Hawk. The call is a *killy-killy-killy*, from which the local name "killy-hawk" is derived.

The diet of the Sparrow Hawk consists almost wholly of insects, although it occasionally takes small sparrow-sized birds and mice. It has a habit of hovering in mid-air, an aerial feat that few birds have mastered, although one in which the Rough-legged Hawk, the terns, the Belted Kingfisher, and the hummingbirds are equally adept.

The Sparrow Hawk builds its nest in a natural cavity of a dead tree or in a hole excavated by a Yellow-shafted Flicker, Pileated Woodpecker, or some other bird of comparable size. It lays from three to five white, creamy-white, or even pinkish-white eggs that are rather evenly covered with fine dots and small spots of various shades of brown, often concentrated in a ring around the large end.

FOWL-LIKE BIRDS

Order *Galliformes*

THIS IS A LARGE and important group, not only because it includes the Jungle Fowl, from which our domestic chicken was derived, but also because it contains some of the world's finest game birds. The American Wild Turkey and the celebrated Bobwhite are certainly among the most notable. These last-named species are the only native wild representatives of the order now present in our state, but other sections of the United States have a wide variety of gallinaceous birds—quail, grouse, ptarmigan, and prairie chickens—not to mention successfully introduced European and Asiatic species such as the Ring-necked Pheasant and the Hungarian Partridge. Several unsuccessful attempts have been made to introduce the Ring-necked Pheasant into the state, and there is currently a small population in the vicinity of St. Francisville that is said to be flourishing. Until there is better evidence of its permanent establishment the species can hardly be considered a true part of our avifauna.

THE GROUSE FAMILY: *Tetraonidae*

GREATER PRAIRIE CHICKEN. *TYMPANUCHUS CUPIDO.* Fig. 53

The Greater Prairie Chicken is a member of the grouse family, a group of large chickenlike birds that are mainly inhabitants of northern forests and mid-

western grassy plains. The prairies of southwestern Louisiana, however, were once occupied by a race of this species that is known as *Tympanuchus cupido attwateri.* Although this race is still fairly common locally on the coastal plains of the central Gulf Coast of Texas, where it enjoys protection from hunters, Greater Prairie Chickens were long ago extirpated in Louisiana. The last definite record in this state came from a secluded prairie fourteen miles south of Vinton on February 26, 1919.

This splendid game bird is famous for its unique courtship antics, which involve the coming together of all the birds of a rather large area in a spectacular communal dance, punctuated by terrific fights and a medley of loud, booming sounds and strange cries. How unfortunate that a few were not left on one of our refuges to multiply or at least maintain a token representation for observation by the present and future generations of Louisianians! Had the few hunters who shot the last hundred or even the last dozen birds foregone the brief, transitory pleasures of killing a prairie chicken, the species might well have survived as an interesting member of our state's avifauna.

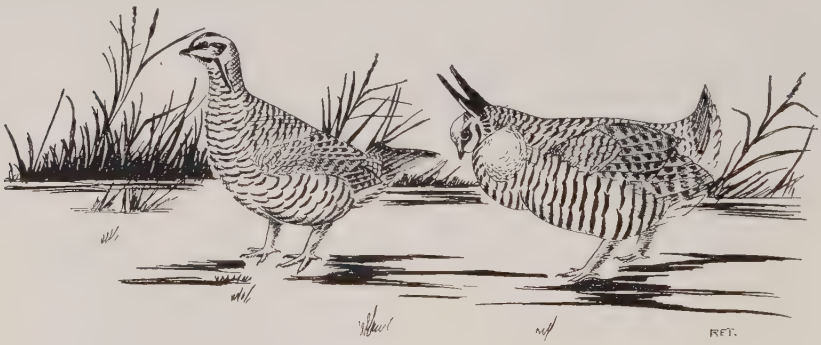

FIG. 53. Greater Prairie Chicken.

The Quail Family:

Phasianidae

BOBWHITE. *Colinus virginianus.* Fig. 54

This is the South's upland game bird *magna cum laude*, a species familiar to all, by the name of either Bobwhite, "quail," or "partridge." Its well-known call is a loud, ringing *bob-white*, or *poor-bob-white*, in which the last syllable is very clear and emphatic.

The man who probably knows more about the Bobwhite than any other naturalist, Herbert L. Stoddard of Thomasville, Ga., found in his years of intensive study that, contrary to popular belief, the males heard calling in late summer are unmated cocks and not indicators of second nestings. Only one brood a year is produced, but since each mating results in an average of fourteen eggs, this gives the species a high breeding potential. If all the eggs from a mated pair hatched and all the young survived, there would be 16 individuals at the start of the following season. Assuming that half of these are males and half females, the eight pairs would each produce an average of fourteen eggs, and (again assuming all survived) 128 Bobwhites would be on hand to start the third season. If we carry this analysis further, we find that the theoretical Bobwhite population at the end of the third year would be comprised of no fewer than 1,024 individuals—all from a single pair. Obviously, no such numbers result in nature, for many decimating factors are in operation that bring the *potential* population down to a much lower *actual* population. Some of the factors involved are those that kill directly, such as adverse weather, lack of food, hunting pressure, and predation. Other factors, such as improper cover, insufficient water, lack of various minerals in the diet, or insufficient grit, operate indirectly but effectively in taking their toll of the population. In brief, no matter how perfect the environment or how inconsequential the killing by hunters or by predators, the maximum population density of the species is rarely, if ever, more than one Bobwhite per acre.

A primary objective of upland game management, as it is now being carried on by a legion of biologists, is to provide the maximum number of Bobwhites per acre. This can only be accomplished by improving the environmental conditions of an area—that is, by providing better cover and more food. Experts agree that on farms that are improved for game according to recommended procedures, fifty per cent of the Bobwhite population can be removed annually by hunting and the area will still maintain the year-to-year maximum population density that would be present *if not a single bird were shot!* To provide a contrast with the breeding potential of the Bobwhite, let us examine that of another game animal, the deer. One mated pair will produce, on the average, one fawn, which as a yearling will not breed. Thus, counting the original pair of adults and the three annual fawns and assuming that the fawn of the first year's mating found a mate when it became two years old, all we would have at the end of the third year would be *six* deer! When we compare this to our figure of 1,024 for the Bobwhite, we discover that a tremendous disparity may exist between two species of animals in their breeding potentials. Fortunately, the Bobwhite's is high.

Fig. 54. Bobwhite (male).

Sound management practices by landowners and the co-operation of sportsmen in limiting their kill in areas where the population is low will insure this fine game bird's survival. The enormous cost of rearing Bobwhites artificially in hatcheries cannot be justified on any basis, except possibly in areas where the species has been completely eliminated and a new "working stock" must be introduced, just as we would plant seedlings where all trees had been cut.

The Turkey Family: *Meleagrididae*

WILD TURKEY. *Meleagris gallopavo.* Fig. 55; p. 219

The Wild Turkey is now almost exclusively confined in Louisiana to the northeastern part of the state and to a few areas in the Florida Parishes. It was at one time widely and commonly distributed, but with the inroads of civilization its numbers have steadily decreased and it is now quite uncommon. The original domestication of the Wild Turkey was accomplished by the Aztecs and by other natives of southern Mexico long before the arrival of the Spanish *conquistadores* in 1519. It was from the natives that the Spanish obtained the stock that was introduced into Europe and which became established there as early as 1540. About one hundred years later the New England settlers brought the domestic turkey back to the Western Hemisphere, only to find here an abundant native wild population. Blackish body color and a white terminal band on the tail are both characteristic of the Mexican turkey population, and even today much of our ordinary domestic stock retains these distinctive features. The native Wild Turkey of the eastern United States has a beautiful

bronze iridescence to the body, and the terminal band on the tail is brown instead of white.

The nest of the Wild Turkey is a well-concealed, scooped out depression containing a few dried leaves, located by the side of a log, in a dense thicket, or in a fallen top of a tree. The eggs, which are creamy-white with numerous small red dots, vary in number from eight to fifteen, rarely to twenty. The smaller sets are laid by young birds. Audubon makes this interesting observation: "When depositing her eggs, the female always approaches the nest with extreme caution, scarcely ever taking the same course twice; and when about to leave them, covers them carefully with leaves, so that it is very difficult for a person who may have seen the bird to discover the nest. Indeed, few Turkeys' nests are found."

FIG. 55. Wild Turkey (male).

Wild Turkey Gobbler with Full Beard ALLAN D. CRUICKSHANK

Whooping Cranes Over Saskatchewan, 5 November 1953 FRED W. LAHRMANN

Whooping Cranes on Aransas Refuge in Winter ALLAN D. CRUICKSHANK

CRANELIKE BIRDS

Order *Gruiformes*

The Crane Family: *Gruidae*

The cranes are long-legged, long-necked birds that superficially resemble members of the heron family. They fly, however, with their necks outstretched, not doubled back in a loop as do the herons (see figure 56). Moreover, the face is almost bare of feathers and the young emerge from the egg with a dense covering of down instead of being virtually naked. The call is a loud, buglelike note, which is totally unlike the simple croaks of the herons. Cranes are exceedingly rare in Louisiana; indeed, in all of my searches for birds in this state, covering over two decades, I have yet to see a crane here.

WHOOPING CRANE. *Grus americana.* Fig. 56; p. 220

Standing over five feet in height, the Whooping Crane is the tallest bird in North America. It is all white except for the head and the black-tipped wing feathers. The head is red on top, on the lores, and on the sides of the throat, and is covered with only a sparse growth of black hairlike feathers. This crane is also one of the rarest of all North American birds, one whose survival or extinction hangs delicately in balance. By actual count, there are considerably fewer than 50 Whooping Cranes left anywhere, and, although an intensive search for the breeding grounds of these few remaining individuals was made over a period of many years, only recently did these efforts meet with success. Regardless of the amount of protection afforded the birds in winter, when the majority, if not all, of them are on the Aransas Refuge in Texas, they must receive attentive care in their summer retreat in far northwestern Canada and along their migration route if the species is to remain a living part of our American avifauna.

The Whooping Crane has a very low breeding potential. On the basis of the number of brown-colored juveniles that come down from Canada each fall, it is apparent that fifty per cent of the adults either go unmated or are unsuccessful parents. If the total population numbered a thousand birds instead of a pitifully small flock, even this low breeding productivity might be sufficient to maintain a comfortable stability. As it is, we cannot afford to lose a single adult bird by any cause, most certainly not by unnatural ones, without serious consequences. In spite of all that has been done in recent years, it is discouraging to learn that in 1950, 1951, and 1952, in the period from May to October, when the birds were either in migration or on their breeding grounds, a total loss of 20 individuals was incurred and only 12 young were produced! The protection of the few surviving birds even in winter is by no means easy, but the main hazard comes when the birds leave their winter refuge to make their long migration flight to Canada. This is especially the case when they are passing through areas where people are not aware of the birds' identity and their great rarity.

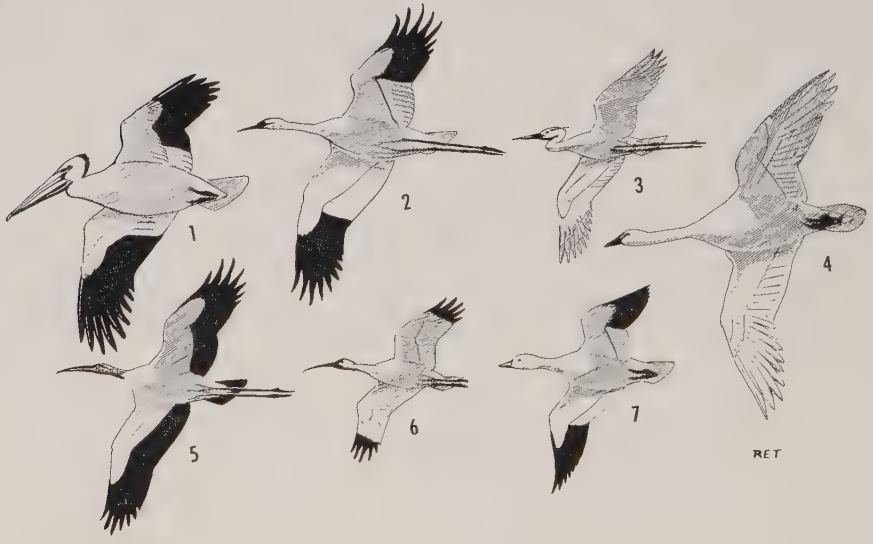

Fig. 56. Large white birds in flight: (1) White Pelican; (2) Whooping Crane; (3) American Egret; (4) Whistling Swan; (5) Wood Ibis; (6) White Ibis; (7) Snow Goose. Note the variously shaped black markings in five species.

Both the prairies and the marshes of southwestern Louisiana were once the wintering grounds for fairly large numbers of Whooping Cranes. Indeed, prior to the introduction of rice farming and the extensive settlement that followed, this area may have constituted the optimum winter habitat of the species and hence the center of its greatest abundance in the nonbreeding season. Even as late as 1899, the well-known naturalist, Vernon Bailey, wrote that Whoopers were "common" on the prairie near Iowa Station, in Calcasieu Parish. Apparently the birds were here in numbers only in late fall, winter, and early spring, but at least a small portion remained each year to nest in the panicum, or *paille fine*, marsh north of White Lake, in Vermilion Parish. By 1919 both the Louisiana wintering and the breeding populations were drastically reduced in numbers, which is hardly surprising when we learn that in 1918 a certain rice farmer near Sweet Lake, in Calcasieu Parish, shot 12 of these magnificent birds because they were feeding on the rice that had fallen from the separator door of a thresher. According to Robert P. Allen, whose excellent studies of the history and habits of the Whooper were published recently as Research Report No. 3 of the National Audubon Society, the year 1918 marked the virtual disappearance of the bird from the prairie habitat of Louisiana, although a small wintering group of less than two dozen individuals and an even smaller breeding population continued to inhabit the panicum marsh area until as late as 1939. In this year John J. Lynch, of the U. S. Fish and Wildlife Service, saw a pair of adults with two unfledged young near White Lake. In the winter of 1940, however, following a severe storm and a subsequent flooding of the marshes in this area, 7 cranes out of 13 known to have been present were presumably lost. This catastrophe, combined with the tragedy of additional losses from birds being shot or caught in muskrat traps, rang the death knell to the existence of the Whooping Crane in Louisiana. The last record of a Whooper in the state is that of a lone individual found by Mr. Lynch near White Lake on December 2, 1949. It was seen on several dates thereafter until March 11, 1950, when it was captured with the aid of a helicopter and taken to the Aransas Refuge in Texas in the hope that it could be used to breed additional individuals. Unfortunately, this bird, called by the name of *Mac*, was destroyed by a predator, presumably a coyote, before it could be used in a breeding experiment.

At present the only two captive Whooping Cranes in the world are in the New Orleans Audubon Park Zoo. One of these birds, a female called *Jo*, was shot and wounded in 1940 south of Eunice and may have been one of

the seven birds that disappeared from the White Lake area following the flood referred to above. In October, 1948, it was taken to the Aransas Refuge and was mated there with a semi-captive individual that had been obtained several years before in Nebraska. The first year the pairing resulted in the laying of two infertile eggs, which after twenty-three days of futile incubation, were broken up by the birds themselves. Following this, in July, 1949, the male bird (called *Pete*) died, presumably of natural causes. The following year *Jo* was placed with a slightly crippled male, named *Crip*, that had been captured on the Aransas Refuge with the aid of horses. In a special enclosure in a remote part of the Refuge, the two birds built a nest and on the night of May 24, 1950, the first Whooping Crane ever hatched in captivity broke its way from the egg. But despite a dawn-to-dusk vigil maintained by Refuge personnel from a twenty-foot tower over 1,200 feet away, the little chick, dubbed *Rusty*, suddenly disappeared in the tall grass. At the time the parent birds were wandering at a distance of some two hundred yards, but on their return to the spot where they had left the little chick, they seemed unable to find it. The observers were at a loss to explain just what happened, for the little crane was only six inches in height and was often concealed by the tall grass. Whether it was killed and eaten by a Turkey Vulture that was seen to alight a few minutes before near the last brooding site or fell prey to some wandering predator, such as a raccoon, is not known. Both *Crip* and *Jo* were subsequently returned to Audubon Park where they are now being given every possible care, but where they have failed to produce additional young.

SANDHILL CRANE. *Grus canadensis.* Fig. 57

The plight of the Sandhill Crane is fortunately not nearly so acute as that of the Whooping Crane. The Sandhill has a wide breeding distribution, which, by no means continuous, extends roughly from Alaska and Hudson Bay southward through parts of the Great Plains of Canada and the northern part of the United States and includes parts of southern Mississippi, southern Georgia, and the Florida peninsula. In much of this area it is now extremely rare. Like the Whooper it has been often shot simply because of its great size and the fact that it offers a tempting target to the irresponsible gunner.

The species once nested in Louisiana, in the southwestern prairie section, and it doubtless also once nested in the Florida Parishes, but I know of no record of its having done so in either place in more than thirty years. Indeed, I know of no recent record at all, except for two individuals that remained on

the Sabine National Wildlife Refuge for several years and were last reported there in the winter of 1950-51. A few breed each year in the flatlands of southern Mississippi, where, as is typical of the species, the bulky, elevated nest of sticks, grass, and other vegetation is placed on the ground in an open pine wood, prairie marsh, or savannah. Only two eggs are laid, and their color is pale greenish clay to brownish buff, blotched and spotted with brown.

FIG. 57. Sandhill Crane.

The Sandhill, like all cranes, flies with its neck extended. Adults are gray in color except for the almost bald, red-skinned forehead (immatures have the head feathered) and a varying admixture of buffy-ochraceous, which in some individuals is extensive. This buffiness is said to be a discoloration, which the crane itself brings about by applying muddy water to its feathers.

[The Limpkin Family: *Aramidae*]

[LIMPKIN. *Aramus guarauna.*]

In the spring of 1935 Mr. Fred Weber told me of a bird that he had shot at Moss Lake, ten miles north of Lake Charles. The specimen was not preserved, but Mr. Weber believed it to be an example of the Limpkin, and he described it in a rather convincing manner. I mentioned this incident to Dr. Oberholser, and through a misunderstanding the record was included in his book with my apparent concurrence. However, since the range of the Limpkin is supposed to be limited to areas where a certain large fresh-water snail of the genus *Ampullaria* occurs and since this snail is unknown in Louisiana, I have never considered the evidence sufficiently strong to merit including the species on the state list.

The Rail Family: *Rallidae*

Rails are usually birds of the marsh and are heard more often than seen. A rail may call from a distance of only a few feet, and when you dash to the spot from which the sound came, the bird calls again a few feet back of you. The expression "thin as a rail" is based on the fact that rails are capable of greatly compressing their bodies laterally and hence are able to slip between stalks of grass that are so close together that it would seem impossible for the birds to pass. They stick their bills out in front to deflect blades of grass one way or the other and scoot on their long toes through the vegetation almost as fast as if it were not there at all. The downy young of all our rails are glossy black, regardless of the color of their parents, and after they emerge from the egg and rest for a few minutes while the down dries, they begin to run

around like baby chicks. Two species in Louisiana are permanent residents, but the others are winter residents only, particularly in our great marshlands. Despite the reluctance of rails to fly more than a few feet at a time once they reach their winter haunts, the migrant species of the group take wing when spring comes and some fly hundreds of miles to a northern nesting site, where they again become sedentary until it is time to return southward with their young. The migration of any bird is a remarkable feat, but in hardly any instance is it more remarkable than in the case of the rails, simply because they are such poor fliers. One member of the family, the Laysan Rail, after unquestionably having used its powers of flight to reach its mid-ocean retreat, proceeded then to lose the use of its wings altogether and became flightless.

KING RAIL. *Rallus elegans.* Pl. XV

This and the following species are the largest of the rails in Louisiana, for they approach in size a several-months-old chicken. The King and Clapper Rails are extremely similar in appearance and are, for the most part, simply ecological representatives of each other. The former generally inhabits fresh-water marshes and is widespread in the interior of the United States; the latter is always found on or near the seacoast in brackish- or salt-water marshes. The King Rail is decidedly reddish in general coloration, both above and below, while the Clapper Rail is mainly olivaceous above and buffy below. Both have the throat white, the upper parts strongly suffused with black, and the flanks barred with dusky and white. There are brackish marshes in which both breed side by side without intermingling; but even though the King Rail does nest sometimes near the coast (as, for example, along the road between Cameron and Holly Beach, at a distance in places of only a few hundred yards from the Gulf), I have never encountered a Clapper Rail in a strictly fresh-water situation.

Peterson describes the notes of the King Rail as *bup-bup, bup, bup, bup,* or *chuck-chuck-chuck,* and the note of the Clapper Rail as a clattering *kek-kek-kek-kek,* or *cha-cha-cha-cha.* This seems to me to be a highly accurate interpretation of the slight difference in the call notes of these obviously closely related species.

The King Rail nests in suitable situations throughout the state, sometimes in a small cattail marsh and sometimes simply in a dense stand of grass in a roadside ditch. The seven to twelve buffy-white eggs, finely speckled with rufous-brown, are placed in a nest of grasses on or near the ground.

The species is much more numerous in winter than in summer, since its numbers are augmented in fall by the arrival of northern visitors. At this season it is not uncommon to find King Rails in roadside ditches, in cane fields, and in grassy places where the ground is damp. Although it is impossible to state the true relative abundance of rails because of their secretive habits, this species is certainly the one most frequently encountered inland, and it occurs even on the coast in numbers comparable to those of the Clapper Rail.

CLAPPER RAIL. *Rallus longirostris.* Pl. XV

The field characters of the Clapper Rail, which is a common permanent resident in our coastal marshes, are discussed in the preceding account along with those of its close counterpart, the King Rail. Like other rails, it builds its nest of grass on the ground in a thick, marshy place. Eight to twelve buffy eggs, blotched with reddish brown, are laid in April. It shares with our other marsh birds and the muskrat the danger of extirpation if the drainage and exploitation of our marshes continue. The only salvation of these species may lie in the acquisition and setting aside of large areas of marshland as natural sanctuaries on which controlled hunting and trapping may be allowed, but on which rigid guard is kept to prevent commercial exploitation without regard for the perpetuation of our living natural resources.

VIRGINIA RAIL. *Rallus limicola.* Pl. XV

The Virginia Rail is about one-half the size of a King Rail, that is, about as large as a Bobwhite but not nearly so plump. The sides of the face are gray, whereas in the King Rail the whole head and neck, except the throat, are reddish. The Black and Yellow Rails and the Sora, which are also small in size, have short, chickenlike bills, entirely different from the long, slightly downcurved bill of the Virginia Rail.

The present species possibly breeds locally in some parts of Louisiana, but as yet no nest has been found. Migrants are known to arrive in late October and to remain until late April, rarely into May. All rails, though, are exceedingly shy and retiring, and unless one can recognize their call notes, they can

Explanation of *Plate XV*

Rails

1. King Rail (p. 227). **2.** Clapper Rail (p. 228). **3.** Virginia Rail (p. 228). **4.** Sora (p. 229). **5.** Yellow Rail (p. 229). **6.** Black Rail (p. 230).

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be quite common in a marshy spot and remain undetected. The calls of the Virginia Rail consist of a varicty of grunting sounds and a *kid-ick, kidick* or *cut, cutta-cutta-cutta.* The difficulty of detecting this rail, which almost certainly must winter in our expansive marshlands in considerable numbers, is evidenced by the fact that it has been listed on only three of sixteen annual Christmas Bird Counts (see page 20) at False River and at Cameron.

SORA. *Porzana carolina.* Pl. XV

The Sora is a small rail about the size of an Eastern Meadowlark. It has a chubby, chickenlike bill instead of the long, slender bill characteristic of the King, Clapper, and Virginia Rails. The Black and Yellow Rails have similarly shaped bills but are distinguished by their diminutive size, which hardly exceeds that of a House Sparrow. The bill of the Sora is yellow, and adults have the throat and area around the base of the bill black, the upper parts olive, and the under parts gray. The immature lacks the black on the throat, and the general coloration is more brownish (less olive).

The species is a fairly common transient and winter resident in Louisiana, occurring mainly from early September until early May. It is found in all kinds of marshy situations, both fresh and saline, and it occurs also in grassy fields. The call of the Sora is frequently described as a "whinny." It starts out on a high note and descends rapidly. Another note frequently heard given by the Sora here in winter is a *keek-keek* that is very suggestive of the call of the Chorus Frogs (*Pseudacris*), especially the Ornate Chorus Frog (*P. ornatus*).

YELLOW RAIL. *Coturnicops noveboracensis.* Pl. XV

The story of the belated discovery of the Yellow Rail at Baton Rouge, where much ornithological work has been done, illustrates how easily rails may escape detection, even where they are actually common. Not until 1943, when I picked up a wing, with feathers intact, in a freshly mowed hayfield five miles below the University, did I have any intimation of the presence of the Yellow Rail in the Baton Rouge area. The wing was unmistakably that of the Yellow Rail, since it had the characteristic white patch in the secondaries, a mark so striking that it serves as an excellent field character to distinguish this small bird that is otherwise a nondescript yellowish brown mottled with black. Later developments revealed that there are numerous Yellow Rails in these fields every fall, and that they can be seen simply by following the mowing

machines. As the tractor with its cutting blade moves forward the little rails flush ahead of the machine a short distance. If they go into the cut section of the field, they duck under the grass and "freeze." By running quickly to the spot and clamping a hat over the mat of grass, one can often catch the rail alive. If the flushed bird flies to the uncut side of the field, tragedy is apt to follow; for, instead of flushing again ahead of the cutting blade, the bird seems to attempt to step over it. Consequently, its feet are often severed or the bird is otherwise maimed, sometimes fatally. Several specimens that we have captured have shown evidence of this sort of injury, and the wing that led to our unexpected discovery was doubtless that of a bird killed outright by the hay-cutting machine.

Attempts to flush Yellow Rails in these fields by having two people drag a rope between them as they walk through the uncut grass have been unsuccessful. The rope, even with weights attached, rides too high on the grass, and the little rails evidently duck under it. However, by following the mowing machine, we have caught as many as seven Yellow Rails in a period of a week. Those that showed evidence of injury were retained as museum specimens and the remainder were released. The Negroes who run these mowing machines are quite familiar with the birds and call them "little prairie chickens." The note, which I have never heard, is said to be *tic-tic, tic-tic, tic, tic.* There are records in the state for the Yellow Rail from October 21 to May 1, all from the extreme southern part of the state or from Baton Rouge.

BLACK RAIL. *LATERALLUS JAMAICENSIS.* Pl. XV

When I recall my experiences with the Yellow Rail, as related in the previous account, I hesitate to proclaim that any kind of rail is rare in Louisiana. There are, however, only four dated records for the Black Rail in the state. These are on dates from November 9 to April 1.

This tiny rail is about the size of a House Sparrow with a bobbed tail. Its color is black and grayish, with white speckling on the back. The young chicks of all rails are black, but in this early stage the body is covered with

Explanation of *PLATE XVI*

GALLINULES AND THE AMERICAN COOT

Purple Gallinule (p. 231) standing in water. Common Gallinule (p. 232) on edge of marsh. American Coot (p. 232) swimming in center foreground and running and swimming on the water in background.

down feathers and the over-all juvenile appearance is so pronounced that they can hardly be confused with the adult Black Rail, except possibly at a distance. Ben Adams of Grand Isle and Lewis Nichols of the Rockefeller Refuge in Cameron Parish both told me that they have flushed many Black Rails—Adams while hunting in the salt marsh with a dog and Nichols while crossing the marshes in a marsh buggy. It seems likely, therefore, that the elusive little bird has simply escaped notice by ornithologists of the state and is actually much more numerous in our marshes than the four dated records would indicate.

PURPLE GALLINULE. *PORPHYRULA MARTINICA.* Pl. XVI

The chickenlike Purple Gallinule, or "blue peter" as it is often called, is without question one of the most beautiful birds in the United States. So striking is its gaudy coloration that the bird appears to be unreal and the product of one's imagination. It is brilliantly colored on the head and the under parts with rich, purplish blue; the back and wings are olive-green; the forehead is bare of feathers, forming a shield that is light blue in color; the feathers under the tail are white, in sharp contrast to the rest of the plumage; the bill is a deep red, tipped with yellow; and the legs are yellow. The species is one of our more common native birds, residing in summer throughout the state along marshy lake shores, rice fields, reed-bordered ponds, and bayous choked with water hyacinths.

The feet of gallinules are equipped with long, slender toes highly adapted to walking on lily pads and other floating vegetation, where the birds go in search of their food of snails, mollusks, and aquatic insects. They move with stealth, but the tail is jerked forward over the back with each step, thereby flashing the white under tail feathers. They have a laborious flight, since the wings are very short and rounded. Consequently, when approached, they seem to prefer hiding in the tall marsh grass to flying.

Poor fliers that Purple Gallinules are, they still leave Louisiana when fall comes and make an extended migration to tropical America, presumably flying across the waters of the Gulf of Mexico (which they definitely do in spring). Except for a few hardy wintering individuals, all are gone by the end of October and remain away until the last week of March. The nest is built on floating islands of vegetation in dense marsh grass and in rice fields. It is made of stems and leaves of various water plants, and often the surrounding plants are brought together over the nest to form a sort of roof as added protection and concealment. The eggs are buff colored with numerous fine drab

or brownish dots and are six to eight in number. The downy young are jet-black and, on hatching, immediately leave the nest in search of food. They are accompanied, of course, by the mother.

In Louisiana Purple Gallinules occur most commonly in the southwestern section of the state, where they nest in rice fields. Here they are said to do some damage by eating the rice and by building nests of woven rice plants that clog the harvesting machines at cutting time.

COMMON GALLINULE. *Gallinula chloropus.* Pl. XVI

The Common or so-called "Florida" Gallinule is decidedly more cootlike in its general appearance and actions than is the Purple Gallinule. It spends a great deal more time in the water, instead of walking on floating vegetation. Any blackish ducklike or cootlike bird with a red bill and a red frontal shield certainly belongs to this species. The coot has a white bill, while that of the Purple Gallinule is red, tipped with yellow and bordered behind by a pale blue frontal shield. The Moorhen of Europe, about which much has been written in English literature, belongs to the same species as our Common Gallinule, being identical with it except for very minor geographical variations.

The Common Gallinule is with us the year around, moderately common in summer, rare and irregular in winter. During the latter season there is no evidence at all of its occurrence in the northern half of the state. Even in summer it is much more numerous in the coastal sections than it is elsewhere. Its calls consist of a variety of chickenlike sounds and explosive, croaking noises that lend immeasurable charm to our marshlands. The nest is placed in thick marshy vegetation, either a few inches above the water or sometimes floating on it. As many as twelve buffy eggs that are finely speckled with brown are laid on dates ranging from late April to July.

AMERICAN COOT. *Fulica americana.* Pl. XVI; fig. 33

This well-known slate-gray bird is the size of a small duck but is immediately distinguishable from a duck by its chickenlike, white bill. It resembles the Common Gallinule, which, however, has a red bill. The *poule d'eau*, as the coot is called in southern Louisiana, can be found on fresh-water lakes and brackish ponds throughout the state in large numbers in fall, winter, and early spring. Sometimes we see coots making their way through the water like dark little ducks, nodding their heads forward and backward as they swim along. But they do not have webbed feet like ducks. Their toes are equipped

instead with flaps or lobes, which act as paddles (see figure 33). Usually coots stay closer to the shore than ducks; for, though they can be eaten, they are not as frequently hunted here during the gunning season and are not as shy. Often they come right out on the shore and walk around like chickens with feet two sizes too big. If we frighten one, however, or chase it in a boat, it spreads its wings and skitters away over the surface of the lake, splashing water in every direction before it finally manages to rise into the air.

In the winter as many as 10,000 coots have been counted on False River in Pointe Coupee Parish, but in spring nearly all of them migrate northward. A few remain in the state, no doubt mating and laying eight to fourteen speckled buff eggs on a platform woven of reeds or sedge back in the marsh vegetation. Yet, I do not know of anyone who has actually found a coot nest in Louisiana.

SHORE BIRDS AND ALLIES

Order *Charadriiformes*

THIS IS A LARGE and diverse order whose range is world-wide. It contains many subgroups, which, on first scrutiny, seem to be quite dissimilar—sandpipers, plovers, gulls and terns, and even the Great Auk—but all these birds have much in common in their structure and in their habits. I never cease to marvel at the similarity in the silhouettes of a tiny plover and a great gull, as the two stand side by side on a sand bar along a beach in late afternoon.

Representation of the order in Louisiana is large, amounting to no less than 59 species. They are nearly all inhabitants of the shores either of our lakes and bays or of the Gulf itself. Louisiana has a fair representation of nesting terns, but otherwise comparatively few of the birds in this order breed within our borders. In summer they are mainly denizens of the North, with the vast Arctic tundra abounding in both species and individuals. Many of them seem to dash northward, rear their young, and then dash southward again. The last of the transient shore birds to go up in the spring must surely meet the first individuals of one species or another to start back, since there is never a time when these little waders are entirely absent from the state. In the group are some of our truly long-distance migrants. Some Sanderlings, for instance, cover approximately 22,000 miles in the round trip between the extreme limits of their summer and winter homes, for they breed within the Arctic Circle and winter in faraway Patagonia. A considerable part of the Sanderling population, however, goes no farther south than the Gulf shores to find food and climate to suit its winter tastes.

Louisiana's long and much indented coast line and its tremendous ex-

panses of inland waters provide an ideal habitat for shore birds and their allies; hence in some months they are with us by the hundreds of thousands. They are truly a fascinating group. Although the order Charadriiformes contains many species of similar appearance, not easily differentiated in the field, this difficulty provides a challenge to the serious student. Much enjoyment can be derived from studying their field characteristics and attempting to identify them.

The Oystercatcher Family: *Haematopodidae*

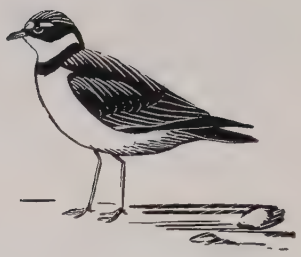
AMERICAN OYSTERCATCHER. *Haematopus palliatus.* Fig. 58

The first shore bird of our list is a spectacular one, yet one that unfortunately is rare in Louisiana. It is primarily a bird of the Atlantic Coast, but even there it is seldom seen, since it prefers the most remote and uninhabited beaches. In Louisiana it seems now to be confined to the secluded sandy and muddy strands of the Chandeleur Chain and nearby islands. In June, 1941, I found two on Isle au Pitre and four on North Island, where they were presumably nesting, but in none of my countless visits to other parts of our coast in the last quarter of a century have I had the slightest glimpse of it.

Although the Oystercatcher is presumably a permanent resident at the latitude of the northern Gulf Coast, all the actual records for it in Louisiana are from March 26 to July 10. It is therefore classified as a summer resident. The bird stands at least a foot in height and is black and white with a large red bill.

The Plover Family:

Charadriidae



In their shape, plovers suggest miniature gulls. They are wading birds with thick, stubby bills (especially in comparison with their relatives, the sandpipers), large eyes, and usually prominent body patterns involving solid areas of white, gray, black, or brown. The best-known representative of the family in Louisiana is the Killdeer, which is here the year around. In certain seasons, however, our sand bars and Gulf beaches are sometimes studded with as many as seven other kinds of plovers.

PIPING PLOVER. *Charadrius melodus.* Fig. 59

This is the first of our five so-called "ringed plovers"—plovers that have one or two bands that either partially or completely encircle the birds' neck and chest. The well-known Killdeer, which is in this group, has *two* bands across the chest that join on the sides. In the other four species—the Piping, Snowy, Semipalmated, and Thick-billed Plovers—there is but one band, and even it may sometimes be broken on the chest. In the adult Semipalmated and Thick-billed Plovers it is always complete; in the Snowy it is always broken; but in the Piping, depending in part on season, age, and sex, the ring may be either complete across the chest or more or less interrupted. The Piping and Snowy Plovers are the two species most easily confused, since both are pale above in color and since the Piping sometimes lacks the complete black band on the chest. In the latter, however, the base of the bill is orange, the tip is black, and the legs and feet are also orange. In the Snowy the bill is entirely black, as are also the feet and legs. When the two species are together it may also be noted that the Snowy has a longer and more attenuated bill.

The Piping Plover breeds mainly in the Great Plains region of the northern United States and Canada and on the Atlantic Coast as far south as North Carolina. It is fairly common in coastal Louisiana in migration (early August to late October and early March to late April) but scarce in midwinter. At

Baton Rouge, which is a fairly typical inland locality, it has been recorded only between August 8 and September 12. The lack of spring observations is probably due to the general absence of mud flats in spring when the Mississippi and other rivers are at or above flood stage and the water levels of ponds and lakes are high following the winter rains.

SNOWY PLOVER. *Charadrius alexandrinus.* Fig. 59

This plover never has the band across the chest complete, but neither do some Piping Plovers. The all-black bill and black legs and toes of the Snowy Plover are, however, diagnostic. Snowy Plovers have never been found nesting in Louisiana, although it is virtually a certainty that they do so at least on the Chandeleur Islands. The species is seen on our coastal sandy beaches from early August to late April but is sometimes decidedly uncommon in midwinter.

SEMIPALMATED PLOVER. *Charadrius semipalmatus.* Fig. 59

The main North American population of this species has long been known by the name of Semipalmated Plover, *Charadrius semipalmatus*, because it is believed to be specifically distinct from the Ringed Plover, *Charadrius hiaticula*, of the eastern American Arctic, Greenland, and the Old World. Now, however, the two are regarded by some specialists simply as geographical variants,

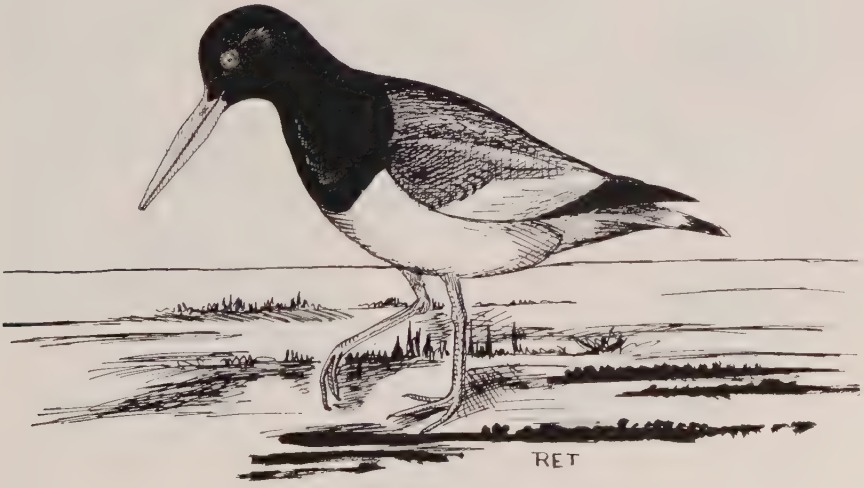


Fig. 58. American Oystercatcher.

or subspecies, of a single wide-ranging species. On this basis, the major contingent of the North American population, including the form that occurs in Louisiana, would then be known technically as *Charadrius hiaticula semipalmatus*. The common name, Ringed Plover, would probably be applied to all populations of the species, both here and in Europe. Such changes of well-established names are temporarily inconvenient, but they serve to express new concepts of avian relationship resulting from careful research and also to bring about uniformity in our English nomenclature. Whatever may be the issues in this particular case, these little plovers are oblivious to all of them. Each summer they raise their young near the bleak shores of the Arctic Ocean. When their family chores are complete they head southward, some of them going almost to the opposite end of the earth, to Patagonia.

In making this trek, the Semipalmated Plover passes through Louisiana and is rather commonly seen on our inland lake shores and mud flats and even

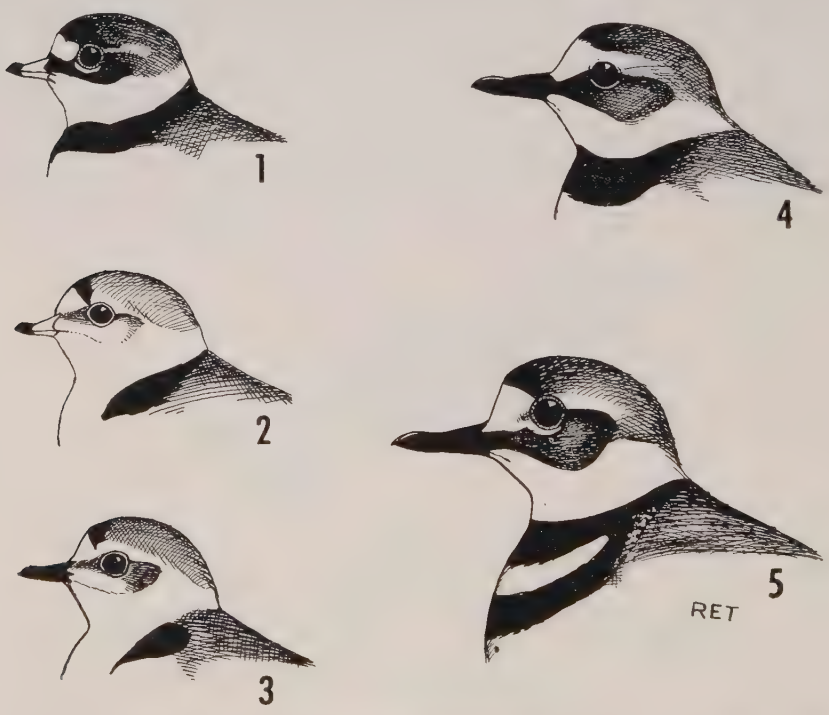


Fig. 59. Heads of five plovers: (1) Semipalmated Plover; (2) Piping Plover; (3) Snowy Plover; (4) Thick-billed Plover; (5) Killdeer.

more frequently along our coastal beaches. It is, indeed, the commonest of our four small plovers, except in summer. It is especially numerous from early March to late May and again from mid-July to late November and is regularly present in small numbers along the Gulf shores even in the middle of winter. Although often seen on clean sandy shores and on the edges of beach pools, it prefers muddy situations, such as the shores east of the Calcasieu River and the great flats on the bay side of East Timbalier Island.

The Semipalmated Plover suggests a miniature Killdeer, but it has only *one* black chest band, while the Killdeer has *two*. It is most like the Thick-billed Plover in plumage, but it has a stubby bill that is dull orange at the base instead of all black, and the legs are dull orange instead of flesh colored. The Piping Plover also is similar in pattern to the Semipalmated Plover, but the latter is *much* darker above.

THICK-BILLED PLOVER. *CHARADRIUS WILSONIA.* Fig. 59; p. 266

The Thick-billed or "Wilson" Plover is a permanent resident in Louisiana, common in summer, scarce in winter. In this state it is strictly a bird of the seabeaches although elsewhere on the Gulf it has occasionally been known to appear a short distance inland along tidal estuaries or along the spoil banks of waterways. We usually find it feeding on the front beaches in the intertidal zone or around ponds formed by high tides washing over the natural levee of the shore's edge. The nest, which is only a depression in the sand with maybe a few broken shells in it, is placed from several yards to as much as a hundred feet or so back from the water, but always well above normal high tides.

The uninterrupted band across the chest of the Thick-billed Plover is jet-black in the male, dusky in the female. In these respects it resembles the Semipalmated Plover, but it may be distinguished from the latter by its flesh-colored legs and longer and much heavier bill that is solid black; the Semipalmated Plover has a small bill that is orange at the base and black only on the tip.

KILLDEER. *CHARADRIUS VOCIFERUS.* Fig. 59

The Killdeer, or "killdee" as the species is often called, is almost too well known to require description. From early September until late May it is conspicuously abundant in fields, meadows, golf courses, and other open situations. Even in summer, when most plovers migrate far to the north to nest, the Killdeer remains at least moderately common throughout most of Louisiana. Its two solid black bands across the chest, its rufous tail with a terminal black band, and its loud, persistent call, *kill-deah, kill-deah*, repeated many times at the slightest alarm, are characters familiar to all.

The species is much less of a "shore bird" than its close relatives, for it oftentimes nests far from water, in cultivated fields, near gravel pits, or in the "rough" of golf courses. The nest, like that of other plovers, is hardly more than a concavity in the ground, although occasionally there may be a few strands of grass or several pebbles beneath the four buffy eggs, which are heavily splotched with chocolate-brown. The young on hatching have a pattern almost identical with that of the parents. As soon as the chicks are out of the egg and have rested for a minute or two while the feathers dry, they begin

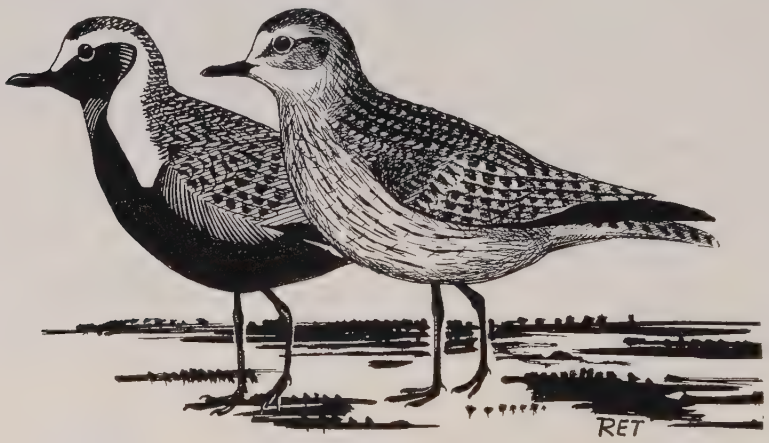


Fig. 60. Golden Plovers: adult breeding plumage on left; winter plumage on right.

to run about on the ground. Should an observer approach the vicinity of the nest or the young, the adults go through a most elaborate "broken-wing act." Amid loud vocal outbursts and fluttering, with one or both wings hanging limp on the ground or pitifully twisted over the back, the parent bird apparently strives to draw attention to itself and to lead the intruder away from the nest or the young. Whatever may be the true psychological basis of the behavior, its survival value cannot be denied.

AMERICAN GOLDEN PLOVER. *Pluvialis dominica.* Figs. 60, 62

Much has been written about this species because of its phenomenal migratory performances. Our American Golden Plovers breed on the Arctic tundra and in fall move eastward to the coast of Labrador, where they take off southward over two thousand miles of open water of the Atlantic in the direc-

tion of Brazil. From the coast of Brazil they move still farther southward to the pampas of Argentina where they spend the winter. In spring, however, the northward flight is overland across South America to the shores of Venezuela and the Guianas. From there they fly across the Caribbean and the Gulf of Mexico to alight in the central Gulf Coast region before continuing on up the Mississippi Valley to their summer home in northern Canada.

Because of this elliptical flight path, we should expect to find the species in Louisiana only in spring, and, to be sure, this is the season when they are most numerous. During or after the first week of March and thence to late April, flocks of American Golden Plovers may be seen frequently in freshly-plowed fields and clearings, on airports and golf courses, and in other similar situations throughout the state. Generally these birds are still in their winter

FIG. 61. Black-bellied Plovers: winter plumage on left; adult breeding plumage on right.

dress, that is, without black under parts; but, as the season progresses, particularly when they are seen in April, there is likely to be a number of individuals in full nuptial plumage. Evidently not all members of the population that breeds in eastern Alaska and Canada move eastward in the fall to Labrador, as once believed, for we sometimes find an occasional individual on the coast of Louisiana in fall and winter. These winter residents are almost always young birds of the year which have evidently deserted the main contingent of the species and have moved directly southward down the Mississippi Valley.

FIG. 62. Two plovers in fall flight: Black-bellied Plover above; Golden Plover below. Note the black axillars in the Black-bellied Plover.

The American Golden Plover, in each of its plumages, has a close counterpart in one of the seasonal or age variations found in the Black-bellied Plover. A summary of the diagnostic differences between the two species is given in the next account.

BLACK-BELLIED PLOVER. *SQUATAROLA SQUATAROLA.* Figs. 61, 62

This and the preceding species are difficult to distinguish in the field unless one knows just what characters to look for. The axillars, a group of long narrow feathers located in the arm pit and hence obscured by the wing except in flight, are black in the present species and pale gray in the American Golden Plover. Moreover, the Black-bellied Plover has a white rump patch that is diagnostic. In the breeding plumage, when both have black bellies, the American Golden Plover may be distinguished by its black (instead of white) under tail coverts, by the absence of a white rump, and by the speckling of yellow instead of white on the back.

Black-bellies are very numerous all along our coast but are seldom seen inland, even in migration. Nonbreeding individuals, which for some reason have failed to migrate northward, may be seen irregularly throughout the summer at Grand Isle, Cameron Beach, and elsewhere. The bird is common to abundant from early September to late April.

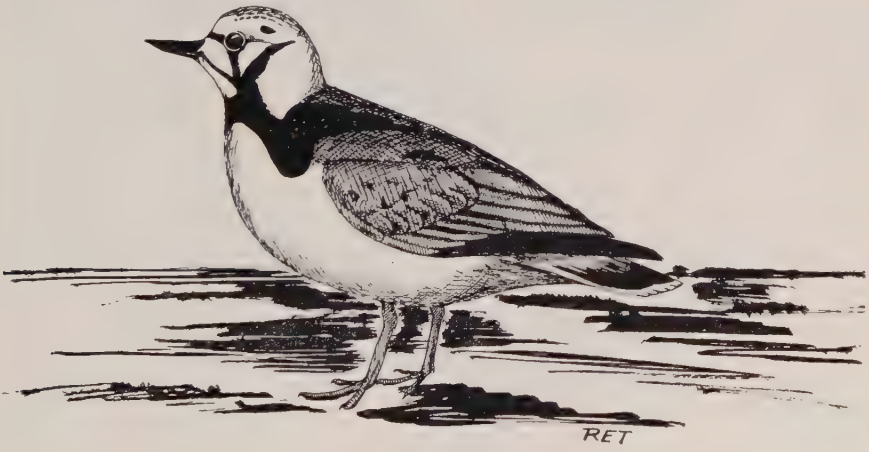


FIG. 63. Ruddy Turnstone.

RUDDY TURNSTONE. *Arenaria interpres.* Fig. 63; p. 268

The Ruddy Turnstone, or "calicoback" as it is sometimes called, is one of the easiest of all shore birds to identify. Its unique harlequin pattern of black and reddish brown, interspersed with white patches, and its orange feet, make it extremely attractive in appearance. It is principally a bird of the seashore and can nearly always be found at Grand Isle. Although numerous only in spring and late summer, it has been observed in Louisiana in every month of the year. Some of the midsummer records, however, are undoubtedly of non-breeding individuals that have failed to migrate northward to the nesting grounds of the species on the tundra bordering the Arctic Ocean. It is not known whether the turnstones that come to the shores of the Gulf of Mexico migrate exclusively up and down the Mississippi Valley. This would not, however, seem to be the case, since the species is very rare inland. Possibly a considerable part of the Gulf population works its way eastward in spring, makes a short overland flight across Florida, and then migrates up the Atlantic Coast.

The Sandpiper Family: *Scolopacidae*

The sandpiper family, which claims the woodcock, snipe, and curlew among its better-known representatives, is nearly cosmopolitan in distribution. Wherever in the world there are wet meadows, muddy beaches, or wave-washed shores, we are more than likely to find at least a few of its members at all seasons, methodically probing their long bills into the ground in constant search for food. The great majority of them nest in the subarctic and cold districts of Europe, Asia, and North America. Consequently, their virtually world-wide occurrence is a result mainly of their intrepid migratory movements outside of the breeding season. Of the 24 species of the family that are known to occur regularly in Louisiana, only two, the American Woodcock and Willet,

breed in the state. The remainder are transients, winter residents, or non-breeding summer residents.

The family consists for the most part of birds of small to medium size, although a few, such as some of the curlew, are rather large. All have relatively long legs and long bills, the first being an adaptation to wading; the latter, an adaptation to probing in the ground. The tip of the bill is provided with tactile nerve endings that aid in the detection of subsurface organisms that cannot be seen, and there are muscles that control the flexible tip that enable the bird to seize these organisms and withdraw them from the sand or mud.

AMERICAN WOODCOCK. *Philohela minor.* Fig. 64

The American Woodcock is a permanent resident in all of Louisiana, except possibly in the coastal marshes. It is abundant in late fall and winter but uncommon in spring and summer. The greater part of the Louisiana wintering population is migratory, arriving here in October and remaining until late January or early February. Local breeding pairs, however, begin to go through their courtship antics in early January, and eggs are to be found soon thereafter,

Fig. 64. American Woodcock.

sometimes in January but more often in February. The nest is nothing more than a depression in the dead leaves on the ground. There the four buffy eggs, marked with brownish spots, are laid.

Although classified as a "shore bird" because of its structural characteristics, the American Woodcock is primarily an inhabitant in the day of wooded areas and at night of fields and pastures, where it comes to feed. The long bill is provided with special muscles that enable the bird to open the flexible tip while probing deep into the mud for earthworms or insects. The chief call note is a comical, nasal buzz, *beezp, beezp.* When flushed from a thicket or some other hiding place, the bird rises straightaway. The several stiff outer feathers of the wing make a peculiar whistling sound when the bird takes to the air. The French name, *becasse*, is frequently applied to this species in Louisiana.

WILSON SNIPE. *CAPELLA GALLINAGO.* Fig. 65

The Wilson Snipe, or "jacksnipe," is abundant in Louisiana in late fall, winter, and early spring, occurring in numbers from October to the end of April, and recorded sporadically as early as August 14 and as late as June 18. It frequents marshes, grassy meadows, and lake shores, blending so well with

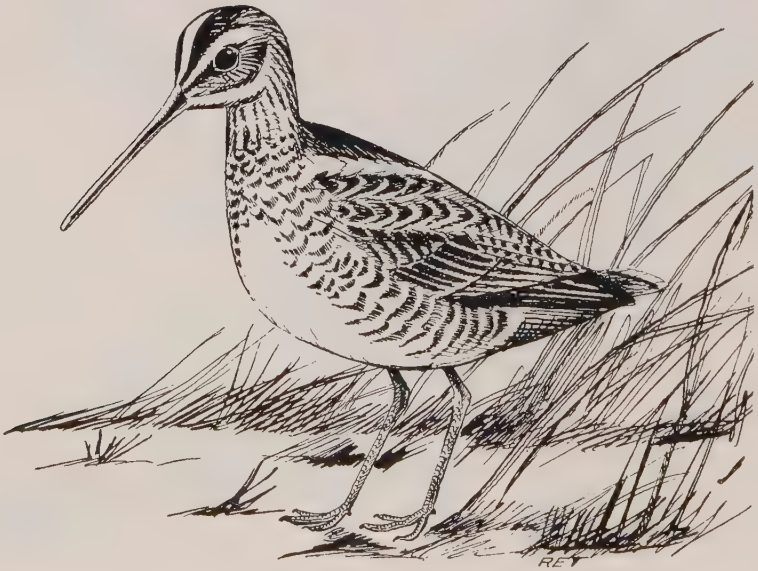


FIG. 65. Wilson Snipe.

the ground that it may easily escape detection. Its body is slimmer than that of the American Woodcock and the outer tail feathers are orange-red. When flushed, it takes off on a rapid zigzag course, instead of flying straightaway. This peculiarity of flight and its harsh, rasping note are each diagnostic of the species.

The Wilson Snipe resembles the dowitchers in body form. In winter, however, the dowitchers are grayish with the rump and lower back white, while the Wilson Snipe is brownish below and very dark above except for a few longitudinal buffy streaks. In spring plumage the dowitchers are pinkish or reddish below and, even though dark like the Wilson Snipe on most of the upper parts, they still have the extensive patch of white on the rump and lower back.

LONG-BILLED CURLEW. *Numenius americanus.* Pl. XVII

Long-billed Curlew are not just ordinary birds. There is something indefinably exciting and special about them. Perhaps it is their grotesquely long, sickle-shaped bill that gives them character. Or maybe it is their razor-edged wariness of us as we attempt to approach them on an open beach or a grassy meadow. But one thing seems certain, at least to me—there are few natural sounds more thrilling than this bird's clear, mellow whistle, a *cur-lee, cur-lee.* Indeed, I pity the man who has never in his lifetime stood alone on an ocean shore, far from the usual discordant sounds of our civilization, and watched curlew probing their bills into the sand and giving out their wild cries at the slightest alarm.

As the name implies, the present species has the longest bill (six to eight inches in length) of all the curlew. It is also the largest. The head lacks any streaking, even a line over the eye; the under side of the wing is pinkish buff; and the feet are bluish. The Long-billed Curlew breeds away from water in the dry, open prairies of the Great Plains region. But while it is in Louisiana it is a bird of the Gulf shores and adjacent meadows, where it is not uncommon from late July to late May and is especially numerous in fall and spring. A few nonbreeding individuals may be found throughout the summer and there are at least moderate numbers present in midwinter. To my knowledge it has been seen in the interior parishes of the state at only one place, Wallace Lake, near Shreveport, where a single individual, presumably the same bird, was seen on both October 18 and 24, 1953.

I have heard the name *corbigeau* applied to this species by the French-speaking inhabitants of Grand Isle and elsewhere along the coast. But I have never learned its meaning.

HUDSONIAN CURLEW. *Numenius phaeopus.* Pl. XVII; p. 266

The Hudsonian Curlew, or "Whimbrel," has about half the body bulk of the foregoing species and has a bill that is only two and three-quarters to four inches in length. There is a buffy line over the eye and another down the center of the crown, both markings which the Long-billed Curlew lacks; and the under side of the wing is gray instead of cinnamon-buff.

Hudsonian Curlew are sometimes seen on the Gulf beaches or around tidal pools near the shore, but most often they are birds of the coastal prairies and wet meadows lying a few hundred yards to several miles inland. There are a few isolated records of the species in southern Louisiana in fall and winter, but it is common only in spring. The main flights arrive from the south of us during the first half of April and continue to pass through until the end of May. In late April I have seen flocks of several hundred on the coastal prairie near the town of Cameron in southwestern Louisiana.

ESKIMO CURLEW. *Numenius borealis.* Fig. 66

Eskimo Curlew once migrated through the southern and southwestern parts of our state in vast numbers, and, as was the case elsewhere along their path, they were slaughtered unmercifully and without heed for the possibility of their ultimate extinction. Each spring they came to the prairies by the thousands, and each spring their bodies were hauled away by the wagonload for shipment to the markets. By 1875, however, there was a conspicuous diminution in their numbers and market hunting was no longer profitable. The last certain record of the occurrence of the Eskimo Curlew in the state is that of one killed at Rayne in Jefferson Davis Parish in 1889. Fortunately, this specimen was preserved and now is in the Louisiana State University Museum of Zoology. There are still occasional reports of an Eskimo Curlew being seen somewhere in the United States, but generally these records are viewed with skepticism.

Some books have stated erroneously that this species can hardly be distinguished in the field from the Hudsonian Curlew, especially from a short-billed individual of the latter. Really, however, there should be no confusion at

all. The Eskimo Curlew has less than half the body bulk of the Hudsonian; its bill averages half as long and is much thinner; the under side of the wings is cinnamon-buff instead of gray; its belly is a warm buff color instead of a grayish brown; and the legs and feet are dark greenish instead of bluish gray.

Fig. 66. Eskimo Curlew.

Fig. 67. Upland Sandpiper.

UPLAND SANDPIPER. *Bartramia longicauda.* Fig. 67

This species is well known in southern Louisiana under the French name of *papabotte*, which is a phonetic expression of the bird's call. There is an old French idea that those who eat the flesh of this bird are imbued with extraordinary amatory prowess. Possibly this belief, coupled with the delicacy of its flesh, is the reason why the *papabotte* was once killed in such great numbers. At one time it migrated throughout the length and breadth of the state in great flocks. Then, because of excessive hunting, it became extremely rare, so much so that there were doubts as to its ability to survive. The timely passage by Congress of the Migratory Bird Treaty Act, in 1918, which forbade the killing of a long list of migratory birds, was the salvation of this and many other shore birds.

Under protection the Upland Sandpiper is once again becoming a regular and fairly common transient in our state, from early March to early May and from early August to late September. It is never, to my knowledge, seen on beaches but is instead a bird of cultivated fields and pastures. The body is

somewhat larger and heavier than that of the Killdeer, but the neck is disproportionately slender and the head disproportionately small. The color above is brownish, mottled with black; the under parts are whitish or pale buffy. The bill is relatively short and thin, and the long legs are greenish yellow.

One of the best field characters of the Upland Sandpiper is its mellow, whistling call. *quip, ip, ip, ip* or *kip, ip, ip, ip*. This is uttered either as it runs rapidly on the ground or as it flies high in the sky at night in its migrations up and down the Mississippi Valley on its way between the pampas of the Argentine and the fields of our own northern United States.

SPOTTED SANDPIPER. *ACTITIS MACULARIA.* Fig. 68

The Spotted Sandpiper is a permanent resident in Louisiana, common in the main periods of migration (March and April; late July to November) but rare in midsummer and midwinter. As yet there is no entirely satisfactory evidence that it nests here, since individuals seen in June may be late northbound migrants and those seen in July may be early southbound migrants. As noted previously, the mere presence of a species in the breeding season is by no

FIG. 68. Spotted Sandpiper.

means proof of nesting. An actual nest, a young individual just out of a nest, or one too poorly developed to undertake sustained flight is required to establish that a species is breeding in an area.

In spring the Spotted Sandpiper acquires the plumage that gives it its name, for the breast becomes heavily sprinkled with black spots. In the molt following the breeding season, however, these spots are lost. The bird is still easily recognized at any season by its habit of bobbing the back end of its body up and down; by the fact that in flight it never lifts its wings much above the horizontal and generally glides a few feet with its wings held at a downward tilt just before landing; and by its distinctive call note, a clear *pee-weet*. At Baton Rouge there are no records for the species between May 25 and July 20, but on the coast it has been seen in every week of the year.

SOLITARY SANDPIPER. *Tringa solitaria.* Fig. 69

The Solitary Sandpiper is very common throughout Louisiana in migration, and stragglers can sometimes be found in the southern part of the state in winter. It has been seen in northward migration as late as June 24 and in southward migration as early as July 17; hence, only for a period of about four weeks in midsummer are records actually lacking. The species is identified by the very dark coloration above, the white eye ring, the dark greenish legs, and the white, conspicuously barred outer tail feathers, which show plainly when the bird takes flight. The call is a *peep-weep*, resembling the note of the Spotted Sandpiper but higher pitched. The Solitary Sandpiper is well named, for usually it is seen alone instead of with flocks of its kind or with other shore birds. It frequents lake shores and the open edges of swamps but is especially fond of drainage ditches. I have never seen it on the Gulf beach.

Despite the fact that this Sandpiper has long been one of the best-known shore birds in the United States, it was not until 1903 that its nest was discovered. The bird was found in summer in abundance around streams and lakes in northern Canada, but repeated search for its nest met with complete

Explanation of *Plate XVII*

Six Long-legged Shore Birds

1. Hudsonian Curlew (p. 248). **2.** Long-billed Curlew (p. 247). **3.** Marbled Godwit (p. 270). **4.** Hudsonian Godwit (p. 270) in winter plumage. **5.** American Avocet (p. 272) in breeding plumage. **6.** adult male Black-necked Stilt (p. 273).

1
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failure. Finally, one day when an ornithologist happened to be sitting on the edge of a small stream watching Solitary Sandpipers passing to and fro, he chanced to notice an individual that appeared to terminate its flight in one of the few trees that dotted the area. Casually strolling over to the tree, he looked up to see only a last year's robin's nest. What prompted this man to climb the tree to inspect the old dilapidated nest is not known, but when he did so he looked down upon the first eggs of the Solitary Sandpiper known to science. No wonder the eggs of the species had escaped detection, for sandpipers are supposed to build their nests on the ground! Now it is well known that the Solitary Sandpiper is an exception, that it always uses abandoned nests of such birds as the robin, grackle, or waxwing, and that the site sometimes may be as much as forty feet from the ground.

WILLET. *Catoptrophorus semipalmatus.* Fig. 70; p. 268

The local names of this large shore bird, *vire-vire* and "pill-will-willet," are derived from two of its call notes. One can hardly set foot anywhere at any time on our Gulf Coast without seeing and hearing this striking bird. When at rest it appears to be an all-gray, nondescript wader, but the moment it takes to the air there is a burst of bold black-and-white markings, as illustrated in

Fig. 69. Female Wilson Phalarope in summer plumage (left) and Solitary Sandpiper (right).

the accompanying drawing (fig. 70). Its loud cries frequently startle into flight all the shore birds along a whole section of beach, just as the observer has approached the aggregation close enough to permit identification of the smaller and more nondescript members. When one approaches the vicinity of a Willet's nest, the adult birds raise a terrific commotion with their incessant *pill-will-willet* call and their terrifying power dives at the intruder. I always instinctively duck although I know full well that the attacker will swerve to one side a few feet from my head. But sometimes airplanes fail to "pull out" of their power dives, and this makes me wonder if the flight mechanism of a Willet is not subject, at least rarely, to some sort of failure!

FIG. 70. Willet.

The species nests in Louisiana only in the marshes along the Gulf Coast, where it is common to abundant the year around; elsewhere in the state it is a rare transient. The nest is a simple depression in the ground above the high tide mark, sometimes with a few sticks or pieces of grass in the bottom or arranged around the periphery. The eggs are usually four in number and are various shades of buff, spotted with dark brown and gray.

In the molt after the nesting season the Willet loses the fine streaking on the breast and the dark mottling on the upper parts, and hence becomes almost an immaculate-white below and ashy gray above. The wings, however, retain the sharply contrasting patches of black and white.

GREATER YELLOWLEGS. *Totanus melanoleucus.* Fig. 71

The Greater and Lesser Yellowlegs are almost identical except in size (fig. 71) and in call notes. The call of the Greater has been described as a three- or four-syllabled whistled *whew-whew-whew*, or *dear-dear-dear*. The corresponding call of the Lesser is a flatter cry of one or two notes, *cu* or *cu-cu*. The long, bright yellow legs serve to distinguish both species from other sandpipers, as does also the flight pattern of a white rump in combination with a back that is dark gray heavily speckled with white instead of streaked.

In Louisiana, the Greater Yellowlegs is a nonbreeder that has been recorded in every month of the year except June, but only in periods of migration is it common over the state as a whole. Its main center of abundance is at the coast, where it remains fairly common even in winter, a season when it is hardly ever found elsewhere. Spring transients arrive in numbers toward the last of February or the first week of March and continue to pass through the state until mid-May. Fall migrants return at the end of July and are common from then until the middle of November.

LESSER YELLOWLEGS. *Totanus flavipes.* Fig. 71; p. 267

The critical differences between the two yellowlegs are noted in the account of the Greater Yellowlegs. The Lesser Yellowlegs might, however, be confused with several sandpipers in its own size class. Its bright yellow legs, white rump, and predominantly white tail will serve to separate it from the Solitary, which has the legs greenish and only the *outer* tail feathers whitish. In addition, the latter has a white eye ring and a different call note. The Stilt Sandpiper, which in winter lacks the barring on the breast characteristic of the

breeding plumage, has greenish legs. The winter-plumaged Wilson Phalarope is purer gray above, is immaculate-white below, and has a bill that is exceedingly thin and needlelike.

The Lesser Yellowlegs occurs here throughout the year, but it does not nest. It is fairly common to abundant in migration all over the state, from March to May and again from July to late October (to December on the coast), but is rare to uncommon in midwinter even on the coast. June records are doubtless based on belated migrants or else individuals that, for some reason, failed to go north with the remainder of their species.

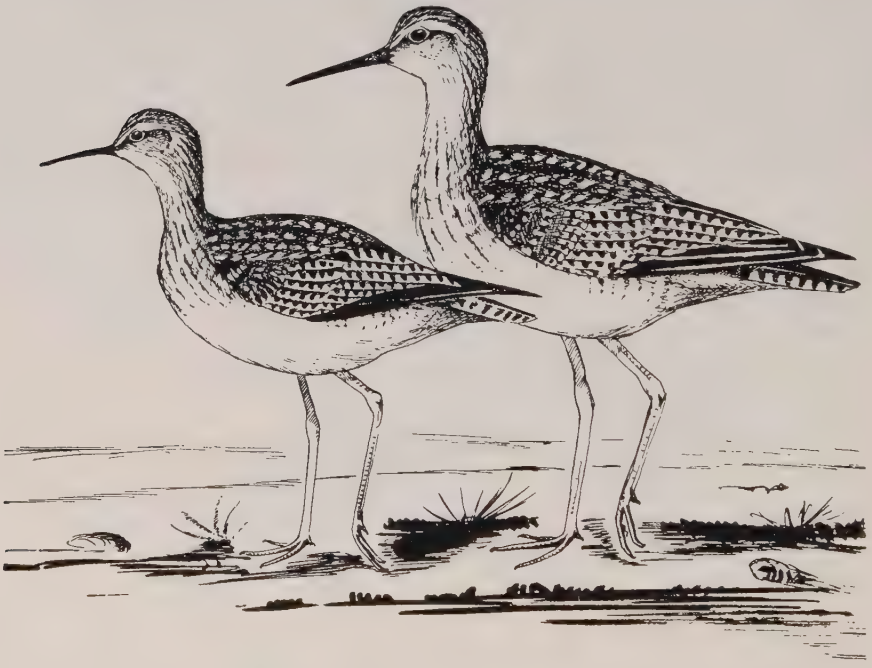


FIG. 71. Lesser Yellowlegs (left) and Greater Yellowlegs (right). RT 50

KNOT. *CALIDRIS CANUTUS.* Fig. 72

In Louisiana this short-legged, heavy-bodied sandpiper is almost exclusively a bird of the sandy beaches of the Gulf shores. Only two individuals have ever been noted inland in the state: one seen on a rain-soaked parade field on the campus at Louisiana State University on September 18, 1943, following a

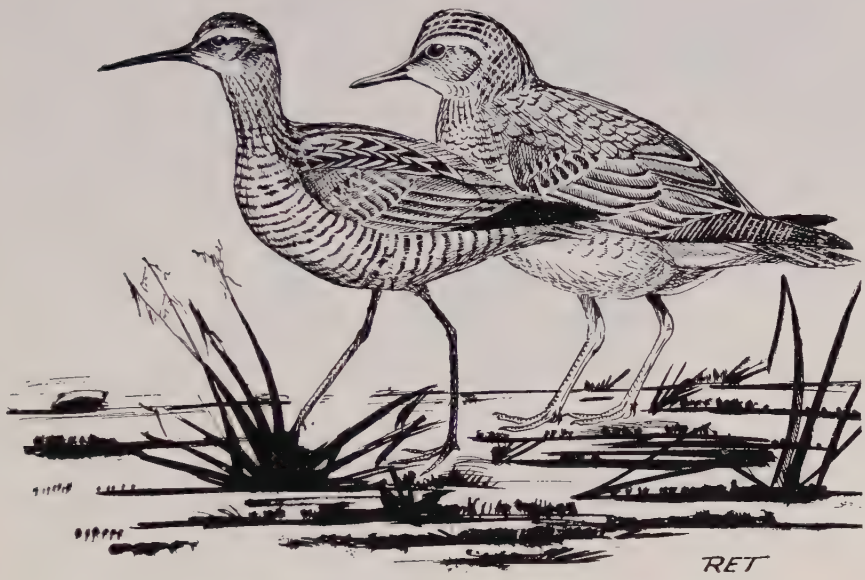


FIG. 72. Stilt Sandpiper (left) and Knot (right).

tropical disturbance in the Gulf of Mexico, and a single individual observed at Shreveport on September 1 and 8, 1951.

Its dumpy shape, short, thick bill, and drab color form a combination that makes the Knot comparatively easy to separate from other sandpipers of its general size, such as the Wilson Snipe and the dowitchers. Sometimes in very late spring I have seen a few belated migrants with the prenuptial molt far enough advanced to give the birds the red breast characteristic of the breeding plumage, from which the vernacular name "robin snipe" stems.

The species breeds on the tundra bordering the Arctic Ocean and migrates in winter as far south as the shores of South America. Although never common in Louisiana, Knots are encountered regularly in such coastal situations as Grand Isle in periods of migration (March to early June; late August to November), and a few sometimes remain during the cold months.

PECTORAL SANDPIPER. *EROLIA MELANOTOS.* Fig. 73

At certain seasons this is one of our commonest sandpipers, and one that, unlike most species of the group, is almost as numerous inland as on the coast. It has a decided preference for grassy lake shores and wet meadows but is not

entirely averse to the muddy Gulf beaches. It resembles the "peeps," as sparrow-sized sandpipers in general are sometimes called, but is considerably larger. The best field mark is the sharp line of demarcation between the heavy streaking on the neck, chest, and upper breast, and the pure white color of the lower breast and belly. A medium-sized brownish sandpiper with an abrupt termination to the pectoral streaking is almost certainly this bird.

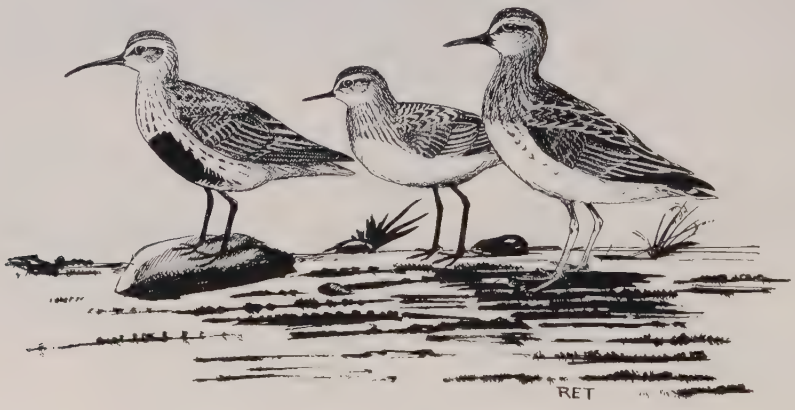


FIG. 73. Red-backed Sandpiper (left); Baird Sandpiper (middle); Pectoral Sandpiper (right).

There are no records for the species in our state in the months of January and June. Indeed, the bird is so rare anywhere in the United States in winter that three individuals seen on the muddy Gulf beach east of Cameron on December 23, 1950, were the only ones recorded on the nationwide Christmas Bird Count of that year. There are records of northbound migrants as late as May 27 and of southbound migrants as early as July 17. Consequently, slight extensions of current records will add the species to the list of birds recorded in Louisiana in every month of the year. The main periods of occurrence are, however, in March and April and from August to November.

WHITE-RUMPED SANDPIPER. *EROLIA FUSCICOLLIS.* Fig. 74

The White-rumped Sandpiper is a fairly common spring transient in coastal Louisiana, less common inland. It has been recorded from March 16 to June 6 but is still unknown anywhere in the state in fall. I can offer no explanation for our failure to find it in the latter season. To be sure it is easily confused with several other species when it is feeding with a large ag-

gregation of sandpipers on the beach, since it is intermediate in size between the small "peeps" on the one hand and the Pectoral Sandpiper on the other. Experienced observers can usually pick out a White-rumped Sandpiper in a flock by subtle characters, but even the experts prefer to delay identification until the bird has been made to fly and reveal its *white rump patch*, a character which it shares with no other sandpiper of its size range except the very rare Curlew Sandpiper. The latter species, however, has a conspicuously downcurved bill.

FIG. 74. White-rumped Sandpiper.

BAIRD SANDPIPER. *EROLIA BAIRDII.* Fig. 73

The Baird Sandpiper is a rare spring and uncommon fall transient in Louisiana, recorded from March to May and from September to November. Since the species migrates in numbers to the west of us, in Mexico and Texas, it may occur more frequently in our western parishes. This is indicated by recent records near Shreveport in September and October, 1953, and in March, April, and August, 1954.

This species is a rather nondescript "peep" that is larger, with paler, browner upper parts, than either the Semipalmated or Western Sandpipers. The breast

is a *pale buff* color and only lightly streaked, and the legs and feet are black. George M. Sutton, who studied the species on Southampton Island, in Hudson Bay, where it breeds, syllabizes the call note as a distinctive *kreep, kreep.*

LEAST SANDPIPER. *Erolia minutilla.* Fig. 75

Of the five so-called "peeps," or sparrow-sized sandpipers, the Least is the smallest, the commonest, and the most widespread. It is browner on the upper parts and on the breast than the Semipalmated and Western Sandpipers, the bill is shorter and more needlelike, and the legs and feet are yellowish instead of blackish. Least Sandpipers are found inland, feeding in wet grassy meadows or in bogs along lake shores more frequently than Semipalmateds or Westerns, but they mingle freely with the other "peeps" on the seashore and on mud flats. They breed in the far North, but there is no month of the year when at least a few may not be found within our borders. In the Baton Rouge area, which may be considered fairly typical of inland localities, the species has escaped detection only in the brief period between May 18 and July 15. It is fairly common there even in winter, notably along the shores of False River.

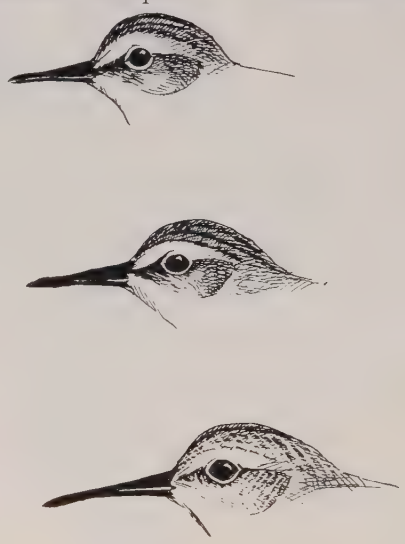


Fig. 75. Heads of "peeps": Least Sandpiper (top); Semipalmated Sandpiper (middle); Western Sandpiper (bottom).

The "peeps" are comical little birds. They gang up in flocks and together methodically scour a beach or mud flat in search of food. I have often wondered what percentage of their pecking motions produces edible morsels, for their bills are probing continuously as they scamper about hurriedly from one spot to another. Another of their remarkable behavior features is the compactness of their flocks in flight. Only a fraction of an inch seems to separate the fast flying birds as they wheel and turn abruptly, first one way and then another. In order for the rear echelons not to crash into the leaders of the flock, as the

latter begin to negotiate a turn, it would seem that the whole maneuver would necessarily have to be simultaneous, with every member of the flock turning together. This supposition, however, presupposes a system of communication whereby the leader is able to give commands that evoke instantaneous response.

CURLEW SANDPIPER. *Erolia ferruginea.* Fig. 76

Ordinarily a species is not added to a state list until at least one specimen has been collected and deposited in a museum where the skin is available for reexamination and its identification subject to reconfirmation. The Curlew Sandpiper, however, is admitted here to the Louisiana list entirely on the basis of a single sight record, since the evidence in this particular case seems to be unequivocal. The bird in question was observed on September 13, 1953, on the edge of a small pond fifty yards back of the front beach two miles east of Cameron, where John Gee and Marshall Eyster discovered it and studied it at leisure for over an hour. The bird, which was in winter plumage, was made to fly several times in order that the distinctive *white rump* could be seen. This feature ruled out the possibility of the bird's being the Red-backed Sandpiper, which, like the Curlew Sandpiper, has a decurved bill; and the decurved bill eliminated the White-rumped Sandpiper as a possibility. Moreover, the earliest fall record ever of the Red-backed Sandpiper in this state is October 5, more than three weeks later than the date in question.

There can be little or no doubt that the bird observed by Gee and Eyster, two competent and painstaking ornithologists, was a Curlew Sandpiper, a

Fig. 76. Curlew Sandpiper (left) and Red-backed Sandpiper (right), both in winter plumage.

Siberian species that is known to be of fairly regular annual occurrence in the United States, at least on the New England Coast. In spring and summer plumage it is unmistakable because of its unique color, which is brownish red except for the white rump. In winter, though, when it is pale grayish above and white below, it may escape detection among the hordes of similar-appearing Red-backed Sandpipers that throng our beaches.

RED-BACKED SANDPIPER. *Erolia alpina.* Figs. 73, 76

The long, downcurved bill of the Red-backed Sandpiper is diagnostic among shore birds of its size class unless a Curlew Sandpiper from Siberia happens to be present. This is not a wholly unlikely possibility, since that species has once been seen at Cameron, once in the Galveston, Texas, area, and numerous times on the coast of the northeastern United States. In spring the Red-backed Sandpiper, or "Dunlin" as it is called in Great Britain, acquires a black belly and a red back, which make it unlike any other shore bird; but in fall it is plain gray above and white below. In that case the presence of a *white* rump in combination with the decurved bill would identify the Curlew Sandpiper.

The species is common on the coast in winter but rare inland, even in migration. It differs from some of its allies in the greater amount of time it spends away from our shores; it is almost always gone by late May and has never reappeared in fall prior to October 5.

SHORT-BILLED DOWITCHER. *Limnodromus griseus.* Figs. 77, 78

Dowitchers are fairly large, snipelike shore birds with a long, straight bill and a white patch that covers the base of the tail, the rump, and most of the lower back. They are usually seen in groups on mud flats or wet grassy meadows, probing their bills into the earth in quest of food. Sometimes these flocks reach vast proportions. For instance, I once saw an aggregation estimated at 2,000 individuals energetically feeding in a pasture in Cameron Parish in early April.

Not until recently did most authorities agree that there are two distinct species of dowitchers, a short- and a long-billed form, which do not interbreed and which are further characterized by significant behavior and call-note differences. Because of individual variation in bill length, there will always be difficulty in separating *short-billed* Long-billed Dowitchers from *long-billed* Short-billed Dowitchers, and for this reason I would recommend that no at-

tempt be made by the field observer to differentiate between the species, except under the most favorable circumstances. Minor distinctions other than bill length that can be used to separate the two species, however, are discussed in the following account.

In summer plumage, the under parts of both dowitchers are reddish with numerous dusky bars or spots, and the upper back is quite dark; but in winter dowitchers are gray above and whitish below with only a faint indication of barring on the flanks. In any plumage, however, they differ from other shore birds in having the extensive white patch on the lower back, rump, and basal portion of the tail. This patch is very conspicuous when a bird takes flight but is otherwise hidden by the wings.

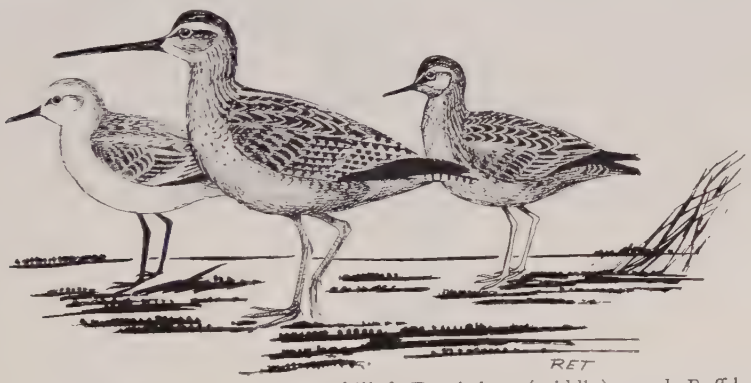


FIG. 77. Sanderling (left); Short-billed Dowitcher (middle); and Buff-breasted Sandpiper (right).

Dowitchers, of either this or the following species, have been recorded on or near the coast of Louisiana in every month of the year, being common in winter and abundant in spring and fall. However, despite their frequent occurrence along the coast, there are few records from the interior. Only once have birds of this genus been seen in the Baton Rouge area, despite the intensive field work there in the last two decades.

LONG-BILLED DOWITCHER. *LIMNODROMUS SCOLOPACEUS.* Fig. 78

This dowitcher breeds in Alaska and in extreme northwestern Canada, but specimens have been taken in Louisiana in every month of the year. There remains, however, much to be learned regarding the relative abundance of the species at different seasons, a problem complicated by its close similarity to its near kin, the Short-billed Dowitcher.

The Long-billed Dowitcher in breeding plumage, as we see it in late April and May, is darker and more extensively reddish below, with the under tail coverts sometimes as reddish as the breast. The dusky markings on the flanks and sides of the breast tend to form bars instead of spots, and the upper back and scapulars are more extensively blackish (less brownish). Although extremes differ by as much as a full inch, bill length in the two species is subject to much overlapping. The call note of the Short-billed bird is a *tu-tu-tu*, while the Long-billed form utters a *keek* that is only occasionally trebled.

FIG. 78. Comparison of heads of Short-billed Dowitcher (lower left) and Long-billed Dowitcher (lower right). The dowitcher in flight is shown to call attention to the white stripe extending from the rump up the middle of the back, an excellent field mark.

STILT SANDPIPER. *Micropalama himantopus.* Fig. 72

The heavy cross-barring of the under parts, reddish "ear" patches, and rather long greenish legs make this sandpiper easily identifiable in spring plumage. In fall and winter, however, its coloration is predominantly dark gray above and white below with a faint streaking on the chest, and therefore it is quite similar to several other species. It suggests a Lesser Yellowlegs, but the legs are greenish instead of bright yellow. It differs from the Solitary Sandpiper in having a white line over the eye instead of a white eye ring and in having a white rump (the Solitary has only the outer tail feathers white, and the rump and central tail feathers are the same color as the back). From the fall- and winter-plumaged Wilson Phalarope, it differs in having a less needlelike bill, in being darker above, and in having greenish legs and a lightly streaked, instead of immaculate, lower throat and upper breast. The Semipalmated and Western Sandpipers are much smaller, have much shorter bills and legs, are shorter necked, and have darker rumps.

The Stilt Sandpiper has been recorded as a transient in suitable situations in many parts of the state. But it breeds, as do most of its kin, in the Far North in the vicinity of the Arctic Circle, and it migrates thousands of miles to winter in South America. Possibly because of the distance the species must cover in coming up from its wintering grounds, its spring passage through Louisiana does not commence in force until April. From then until mid-May it is not uncommon. In midsummer as soon as the young are able to fly, the family groups must immediately head southward again, for the last week of July finds some Stilt Sandpipers back on the Gulf Coast, and by late August fair numbers are again in evidence. There are, however, no fall records in Louisiana later than October 17.

SEMIPALMATED SANDPIPER. *Ereunetes pusillus.* Fig. 75

This and the following species, the last of the so-called "peeps," are not easy to distinguish in the field. Both resemble the Least Sandpiper, but, as previously noted, that species has a thin needlelike bill, is browner on the upper parts and breast, and has yellowish, instead of black, legs. *Most* Semipalmated Sandpipers can be distinguished from *most* Western Sandpipers by bill length. If the bill is shorter than the head, the bird in question is a Semipalmated; if the bill is definitely longer than the head, it is a Western. But bill length in the two species is subject to much individual variation; hence, there will always be some birds with bills that are intermediate in length and therefore indeterminate in the field as to species. The fact that the Western is

Thick-billed Plover Chick Finds a Shady Spot SAMUEL A. GRIMES

Hudsonian Curlew, or "Whimbrel" ALLAN D. CRUICKSHANK

Lesser Yellowlegs ALLAN D. CRUICKSHANK

Black-necked Stilt at Nest ALLAN D. CRUICKSHANK

Willets in Silhouette ALLAN D. CRUICKSHANK

Ruddy Turnstones Resting ALLAN D. CRUICKSHANK

conspicuously more reddish above than the Semipalmated in spring, however, is a help at that season.

The Semipalmated Sandpiper is an abundant migrant on the coast but is much less frequently observed inland, where it is decidedly less common than the Least Sandpiper and somewhat less common than the Western Sandpiper. There are a few weeks in midsummer when it is absent, and in midwinter its numbers are variable even on the coast; sometimes flocks are present, sometimes careful search is required to find a single individual.

WESTERN SANDPIPER. *Ereunetes mauri.* Fig. 75

The Western Sandpiper is abundant along the coast from August to late May, and it occurs in small numbers even in June and July, becoming more numerous toward the end of the latter month. Although less common inland, it is everywhere in the state the commoner member of the genus. The more reddish coloration in springtime and longer bill at any season generally serve to separate it from the Semipalmated Sandpiper, the species to which it bears the closest resemblance (see also Least Sandpiper).

BUFF-BREASTED SANDPIPER. *Tryngites subruficollis.* Fig. 77

The Buff-breasted Sandpiper, until a few years ago, was considered a very rare transient in Louisiana. Now that its habitat preferences are better understood, however, it is found regularly in both small and large flocks. The species is seldom observed with other shore birds but instead feeds almost exclusively in grassy meadows. Once on September 1 we found these sandpipers abundant on the prairie a few miles west of Cameron, where they were feeding in the innumerable rain-filled cowtracks, and as many as 120 were counted on April 5 and 12, 1954, in a wet field near Duson. Another favorite type of haunt, following heavy showers, is the turf of a golf course, a parade field, or a new grainfield.

The Buff-breasted Sandpiper is not easily confused with any other bird. It is scaly tan above and plain buffy below, passing into buffy-white on the abdomen and under tail coverts, rarely on the lower breast. The bill is short and the legs are yellowish. Baird Sandpipers are buffy only on the upper breast (throat and belly are white), and the legs are blackish. Dates extend from early April to mid-May and from the first part of August until early October. The species breeds in the Arctic and winters near the delta of the Río de la Plata, in Argentina and Uruguay.

MARBLED GODWIT. *Limosa fedoa.* Pl. XVII

Godwits are large shore birds with long, upturned bills. The Marbled Godwit is a uniform light brown color in both summer and winter dress (the similarly-colored Long-billed Curlew has a downcurved bill). It was doubtless at one time a common migrant and winter visitor, but, like many other shore birds, its numbers were diminished almost to the point of extinction by market hunting. When Oberholser wrote his *Bird Life of Louisiana*, he could find but two definite state records for the species, one in 1885, the other in 1888. In the years since 1938, when Oberholser's work appeared, Marbled Godwits have been seen on numerous occasions on the coast in spring, late summer, and fall. I have found them in moderate numbers on East Timbalier Island in August and common there in November. The bird has likewise been noted frequently in the last decade in Cameron Parish and in other coastal areas.

Spring migrants arrive in early April and remain until the end of May. Fall migration covers the period from mid-August to late in December. Inland records for the state are lacking, but there is no reason why the species should fail to visit suitable situations away from the coast in migration. Since it breeds in the Great Plains region of the northern United States and Canada, it must necessarily pass over the interior of Louisiana, en route to and from its nesting and wintering grounds.

HUDSONIAN GODWIT. *Limosa haemastica.* Pl. XVII

The Hudsonian Godwit is one of our rarest shore birds, having been recorded on only five occasions—in April, May, and September. Although the closely related Marbled Godwit is apparently making a comeback following its near extirpation in the nineteenth century, the present species has shown few signs of recovery. Except for a single individual seen by Horace H. Jeter between May 12 and 24, 1951, near Shreveport, there are no Louisiana records since 1895.

In spring the Hudsonian Godwit is extremely dark above and the breast is a dull reddish with numerous horizontal black bars, especially on the sides and flanks. In fall, however, it is a drab gray above and whitish below. Except for the slightly upturned bill, the broad black band on the terminal half of the tail, and the absence of the bold black-and-white flight pattern in the wing, it is a close counterpart of a winter-plumaged Willet. I believe that the

Hudsonian Godwit may have more than once escaped detection in fall because of this striking resemblance to one of our commonest species. There are just too many Willets on our shores for each one seen in the course of a day to be scrutinized closely.

SANDERLING. *Crocethia alba.* Fig. 77

Sanderlings are the little sandpipers that have aroused the curiosity of nearly everyone who has visited the seashore. On their short legs, which they move incredibly fast, they run down to the water's edge right behind a receding wave, probe their little bills into the wet sand, and then go scurrying back to higher ground as the succeeding wave comes rolling in. Oftentimes, with a heavy surf, it would seem certain that the sea must overtake them, but seldom do they get more than the pads of their toes wet.

In winter the color of the Sanderling's plumage is nearly that of dry sand, hence their name; but in spring, before they leave us to go to their breeding grounds in the Arctic, they display varying amounts of their summer dress, in which the head and breast become rusty in color. In flight Sanderlings show a conspicuous white streak along the length of the wing, and they are by far the whitest of our sandpipers. Their preferred habitat is the front beach, where they are common, from mid-August to the end of May and where a few can sometimes be found even in midsummer. Although they must migrate overland up and down the Mississippi Valley, the species has been seen only three times in the interior of our state, once near Shreveport and twice at Baton Rouge.

The Stilt Family:

Recurvirostridae

The family in Louisiana includes two species, the American Avocet and the Black-necked Stilt. Each is extremely long legged and long necked for a shore bird. As the name Recurvirostridae suggests, many members of this family have the bill upturned toward the end. This is true of the avocets, but not the stilts, which have straight bills.

AMERICAN AVOCET. *Recurvirostra americana.* Pl. XVII

These graceful and handsome shore birds appear to be increasing from year to year. None were reported from Louisiana between 1889 and 1940. Since then avocets have been seen more and more regularly and in ever-increasing numbers, a trend climaxed on January 26, 1954, when a flock estimated at 1,100 was seen on the state-supervised Rockefeller Refuge in Cameron Parish.

Its contrasting black-and-white pattern, bluish legs, and upturned bill make the American Avocet a bird that can be confused with nothing else on our shores. In spring and summer the head and neck become a light pinkish tan. Breeding takes place, for the most part, in the Great Plains region of the western part of North America. In the spring of 1953, however, a few individuals remained in a shallow cove near the west jetty at the mouth of the Calcasieu River, after the main contingent departed, and were seen in early June, suggesting the possibility that they might have nested nearby. The species is known to breed occasionally on the coast of Texas and hence may soon be discovered nesting in this state.

As the Rockefeller Refuge observation mentioned above clearly indicates, the American Avocet is now common in extreme southwestern Louisiana in winter; and there are recent records of the occurrence of single individuals and of small flocks all along the coast. Inland records are still rather scattered

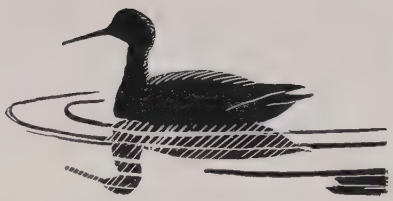
and generally pertain to single individuals, but a sizeable flock of 75 was seen on a sand bar two miles below Shreveport on October 23, 1949. On the basis of these noncoastal records, all of which are in late summer and fall, it would appear that migrants pass through the state from mid-August until after the middle of November.

BLACK-NECKED STILT. *Himantopus mexicanus.* Pl. XVII; p. 267

The stilt is a well-named bird, for although its body is not much, if any, longer than that of a Killdeer, its legs are more than twelve inches in length—it literally stands on stilts. In many respects it is one of our most attractive shore birds. The wings, back, and hind neck are black; the rump, tail, and under parts are immaculate-white; and the legs are brilliant red! The long, needlelike bill is black and straight, not turned up as in most members of the family Recurvirostridae.

Stilts are confined to the coast, where they are regular summer residents. They are especially numerous in southwestern Louisiana, and less numerous farther east. Some individuals probably remain all winter, but the population is drastically reduced at that time, and there is still no record for the state in February.

Stilts build their nests of a few sticks and twigs in the marsh or near the edge of a muddy flat, laying three to seven buffy or dull yellow eggs that are beautifully spotted with dark brown or black. They are noisy birds at all seasons, the call being a loud "yipping" note. In the vicinity of the nest we find them especially vociferous as they display themselves conspicuously in an attempt to lead intruders away from their territory.



The Phalarope Family:

Phalaropodidae

Phalaropes are peculiar shore birds in several ways. For one thing, the female, not the male, wears the bright colors—a contradiction to the general rule in nature that the male is the more handsome of the sexes. It should be noted, moreover, that the drab-plumaged male takes over the chores of incubation and is probably much less conspicuous in this role than the gaudy female would be. Another feature of phalaropes is their predilection for feeding, ducklike, out in the middle of large bodies of water, or even on the open sea. Indeed, the Red Phalarope winters entirely on the open Gulf or on the waters of the southern oceans, far from land. Phalaropes have marginally-lobed toes, which they apparently hold in such a fashion as to make a cup-shaped paddle, for they swim with adeptness. They have the habit of whirling rapidly in a circle on the water, a behavior that must operate to some advantage in their quest for the tiny aquatic organisms on which they feed.

RED PHALAROPE. *Phalaropus fulicarius.* Fig. 79

There is but one state record for the Red Phalarope—that of an individual obtained on the campus of Louisiana State University on October 12, 1950. The species should, however, occur during the winter in Louisiana's offshore waters, since it is known to be common from five to forty miles off Pensacola, Florida, between October 13 and March 17.

The coloration in winter is gray above and white below; the bill is black at the tip and yellowish at the base. The Wilson Phalarope in winter is likewise gray above and white below but is much longer legged and has an all-black bill that is nearly twice as long, quite like a Lesser Yellowlegs' in size and form. The Red Phalarope resembles the Northern Phalarope, a species not yet known from our state, more closely than it does the Wilson Phalarope. Since there is good reason to believe that the Northern Phalarope has simply been overlooked in Louisiana, it may be well here to anticipate its eventual detection and to point out a few of its distinguishing features. This latter

species is considerably smaller than either of the other two phalaropes, has a prominent black line behind the eye in winter plumage, and has an all-black bill that is even thinner than those of its relatives. It is slightly smaller than the present species and lacks the yellow at the basal part of the bill. The Red Phalarope may suggest a Sanderling, but unlike the Sanderling it has a well-defined dusky mark through the eye. In spring and summer the species is rusty-red on the under parts and neck and has a white facial patch.

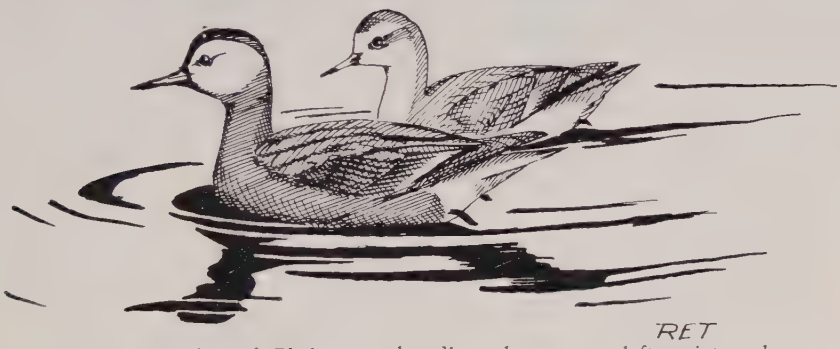


FIG. 79. Female Red Phalaropes: breeding plumage on left; winter plumage on right.

WILSON PHALAROPE. *STEGANOPUS TRICOLOR.* Fig. 69

This phalarope is less inclined to swim in open water than either the Red or Northern Phalaropes; it is, in other words, more typically a *shore* bird. In spring the female has a bright reddish streak on the side of the neck that blends into a black patch on the face. The top of her head is gray, the back is rusty, and the under parts are immaculate-white. The less attractive male is similar but has only a tinge of reddish on the side of the neck and no prominent black facial patch. In fall both sexes are pale gray above and white below and resemble somewhat the Lesser Yellowlegs. They may be distinguished from the latter by their creamy-yellow, instead of bright yellow, legs; by their thin, needlelike bill; and by their immaculate grayness.

The species winters mainly in faraway South America and is most likely encountered on the coast of Louisiana from late April to early May, a period in which it is sometimes moderately common. The few fall records are in August and September. Although most frequently observed on the coast, the species is also occasionally seen on edges of lakes, rivers, and ponds in the interior of the state.

[The Jaeger Family: *Stercorariidae*]

Jaegers (pronounced yā′gĕrs) are the avian pirates of the sea. In fact, the name comes from the German *jäger*, meaning "huntsman." They pursue and plunder the gulls and terns, robbing them of their food and eating their eggs and young. Jaegers have longer and more pointed wings than their relatives the gulls, and the beak is strongly hooked. Although they come to land to nest on the Arctic tundra, they are truly birds of the open sea, roosting at night on the waves or on flotsam and coursing for hours on open wings during the day. Indeed, despite their apparent abundance in the Gulf of Mexico in winter, there is not a single record of a jaeger's occurrence on land on the northern Gulf Coast. Deep sea fishermen, however, who go into offshore waters, are quite likely to encounter one or another of the three species.

The plumage in each species varies appreciably since there are light, intermediate, and dark phases. A good field mark of all jaegers in all plumages is the white streak in the wings produced by the white basal color of the wing quills. Most adults can be relegated to their proper species by the shape of the central tail feathers, which, in mature jaegers, are longer than the lateral tail feathers. In the Long-tailed Jaeger, central tail feathers are long and pointed; in the Parasitic, relatively short and pointed; in the Pomarine, rounded and twisted into a vertical plane (fig. 80).

[POMARINE JAEGER. *Stercorarius pomarinus.* Fig. 80]

This species has been seen in numbers in April along the continental shelf between points opposite Cameron and Morgan City by biologists on the U. S. Fish and Wildlife Service's exploratory and research vessel, the M/V *Oregon*. The following specimens were actually obtained in this section of the Gulf in the spring of 1952: one at

FIG. 80. Tails and silhouettes of jaegers: (1) Pomarine Jaeger; (2) Parasitic Jaeger; (3) Long-tailed Jaeger. Note shape and length of central tail feathers.

latitude 28°25′N, longitude 92°33′W, on April 10; and two others at latitude 27°45′N, longitude 92°54′W and latitude 27°34′N, longitude 92°54′W, respectively, on April 11. It and other species of jaegers should be looked for by fishermen who visit the waters off the mouths of the Mississippi River, where the continental shelf lies much closer to the mainland than it does off southwestern Louisiana.

The twisted central tail feathers are diagnostic of the species, but, unfortunately, immatures and birds in molt may lack this feature. The central tail feathers of adults are so twisted that they lie almost in a vertical plane and therefore show their full width when viewed from the side. Since in other jaegers these feathers under similar circumstances are viewed on edge, the difference is a striking one, visible at considerable distances. Figure 80 illustrates these differences in lateral aspect.

[PARASITIC JAEGER. *Stercorarius parasiticus.* Fig. 80]

The Parasitic Jaeger is no more parasitic than its relatives, for all jaegers get a great deal of their food by robbing other sea birds of their catches. As seen from Figure 80, the pointed central tail feathers are diagnostic of this species, provided, of course, that proper conditions of molt and age obtain. When I crossed the Gulf to Yucatán in the spring of 1948, I saw jaegers of this species on May 1 at points as close as twenty-eight and fifty-six miles south of the mouths of the Mississippi River. The Long-tailed Jaeger, the third and remaining species that is known to occur in the Gulf area, has not been seen in waters adjacent to Louisiana, although it should be looked for there.

The Gull Family:

Laridae

This family in Louisiana includes 17 species of gulls and terns, water birds that frequent our rivers, lakes, or seashore. In south Louisiana gulls and some of the larger terns are known to the French-speaking people by the name *goeland*. Elsewhere they go by the name "sea gull." All are long winged, with attractive patterns of black and white, usually with large areas of pearl-gray. Gulls are generally more robust than terns; they pick their food off the water instead of plunging for it as do terns; and they fly with their *hooked bills* directed straight ahead, while a tern's *pointed bill* is held at a downward angle. Also, gulls have relatively much longer legs than do terns.

Of the six kinds of gulls that are known to occur in Louisiana, only the Laughing Gull nests here. But of the 11 Louisiana terns, seven breed within our borders, and at least two others may have done so in years gone by. Indeed, Louisiana's coastal islands are famous as nesting sites for these beautiful and graceful birds, which at one time were slaughtered unmercifully for the millinery trade or had their nesting colonies robbed of their eggs for human consumption. Had it not been for the passage of the Lacey Act in 1909 and the Migratory Bird Treaty Act in 1918, it is quite probable that many of the terns would have joined the ranks of the Dodo, Passenger Pigeon, Carolina Parakeet, and the other victims of man's once complete disregard of the potential exhaustibility of our wildlife.

HERRING GULL. *Larus argentatus.* Pl. XVIII; fig. 81; p. 287

The Herring Gull is by far the largest of the six gulls that occur in Louisiana. In adults, which are rather uncommon in Louisiana in comparison with

immatures, the upper surface of the wings and the back are pearl-gray; the tips of the wings are black; the head, under parts, and tail are immaculate-white; the bill is yellow; and the legs are flesh colored. Immatures are a drab, dirty brown during their first year but somewhat lighter colored the second year. Four years or more are required for the Herring Gull to attain complete adult plumage. The immature Ring-billed Gull is also brownish in coloration but its smaller size, its whitish tail with a prominent black subterminal band, and its yellowish, instead of flesh-colored, legs distinguish it.

The species breeds from the Arctic south to Long Island and on the larger lakes near the Canadian border of the United States; but immature birds and very old, senile adults sometimes do not migrate northward and instead summer on the Gulf Coast. The Herring Gull is fairly numerous in winter on our larger rivers, particularly the Mississippi, but only on the coast and in the vicinity of coastal waterways is it abundant. The main season is from late November to the end of April, although records are completely lacking for the months of July, August, and September.

RING-BILLED GULL. *LARUS DELAWARENSIS.* Pl. XVIII; fig. 81; pp. 286, 287

This abundant winter resident, which is especially numerous in southern Louisiana, may be distinguished by the black ring near the end of the bill, by its yellowish legs, and by the fact that it otherwise looks like a small edition of the Herring Gull. Immatures are much lighter colored than immatures of the other Louisiana gulls (except the very small Bonaparte Gull), and the tail is crossed by a narrow, subterminal black band. The immature Laughing Gull also has a terminal tail band, but its breast is dirty gray in color, not white as in the Ring-bill.

There are a few Ring-billed Gulls on the coast of Louisiana every month of the year, but the species is uncommon to rare after the first of May. Fall migrants appear in numbers in October and from then until spring the species is abundant, particularly along the larger rivers and on the coast. The Ring-billed Gull breeds in Canada and in the extreme northern part of the United States.

LAUGHING GULL. *LARUS ATRICILLA.* Pl. XVIII; figs. 81, 82

The Laughing Gull is so strictly a coastal species that it occurs only casually even as short a distance inland as Baton Rouge. In its maritime habitat, however, it is an abundant permanent resident, somewhat more numerous in

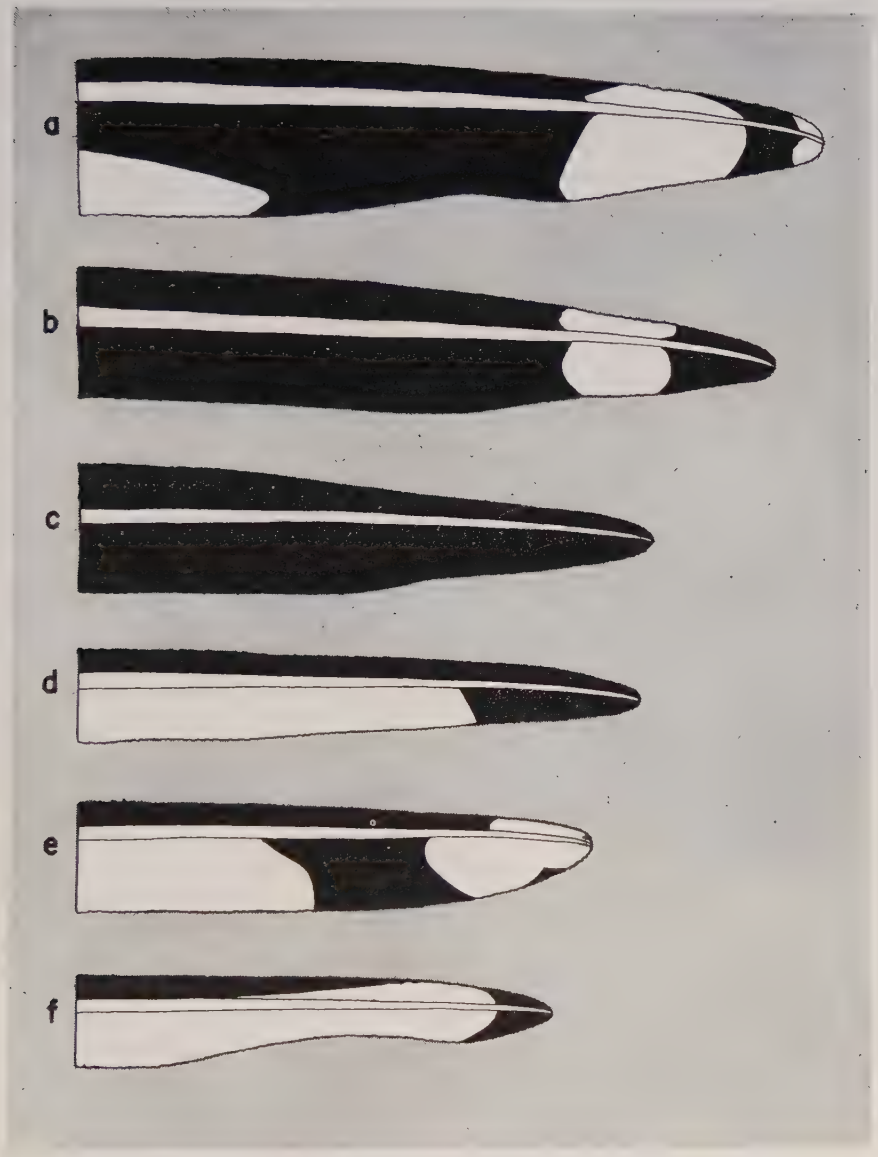


FIG. 81. Outermost primaries of the gulls of Louisiana: (a) Herring Gull; (b) Ring-billed Gull; (c) Laughing Gull; (d) Black-legged Kittiwake; (e) Franklin Gull; (f) Bonaparte Gull.

summer than in winter, but always present in considerable numbers. It is the only gull that breeds in the state.

In spring and summer the adult Laughing Gull is separable from other gulls regularly present (see, however, the Franklin and Bonaparte Gulls) by its black head, red bill, dark slate-gray upper surfaces, and white under parts and tail. In winter the bill changes to black and the head becomes white or grayish, yet the back and upper surface of the wings retain the distinctive slate-gray rather than pearl-gray color. Immatures are brownish, with a white rump and a broad terminal black bar on the tail. The name of the species comes from its laughing call note, *ha, ha, ha, ha, haah, haah, haah, haah*—an excellent aid in identification.

The main nesting grounds for the species on the Gulf Coast are the islands in the Chandeleur Chain and the mud lumps at the mouths of the Mississippi River. Four large greenish eggs with numerous dark blotches are laid in a depression in the sand usually amidst a collection of trash and driftwood. Laughing Gulls work havoc in tern colonies, and even in colonies of their own species, by eating the eggs in unguarded nests. The only Gull-billed Tern nest ever found in Louisiana had its eggs destroyed, probably by a Laughing Gull, in the time it took me to walk several miles back to my boat at the other end of the island to obtain a camera. In studying the interesting tern eggs I had frightened away the adults, and on my departure a Laughing Gull evidently swooped down and ate the eggs before either of the rightful owners returned. When terns are not frightened from their nesting colonies by human intruders, there are probably enough birds on hand to protect the eggs and young from the marauding Laughing Gulls. For this reason the National Audubon Society and other conservation agencies, which work to protect against illegal molestation by egg hunters, generally forbid visits to the colonies even by bird students.

Explanation of *Plate XVIII*

Adult Gulls

1. Herring Gull (p. 279). **2.** Ring-billed Gull (p. 280). **3.** Laughing Gull (p. 280), breeding plumage in foreground, winter plumage behind. **4.** Bonaparte Gull (p. 284) in breeding plumage. **5.** Franklin Gull (p. 283) in breeding plumage. **6.** Bonaparte Gull (p. 284) in winter plumage.

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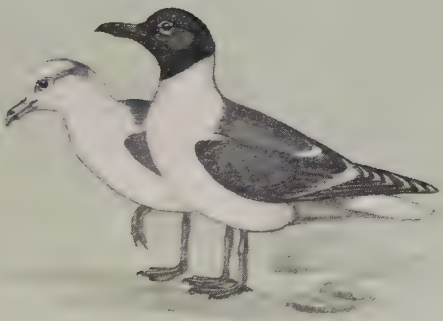

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FRANKLIN GULL. *LARUS PIPIXCAN.* Pl. XVIII; figs. 81, 82

The Franklin Gull breeds commonly in the prairie regions of interior North America and migrates southward through Texas, apparently a little too far to the west of our state for it to appear here regularly in numbers. As a matter of fact, there are but few specific records of its occurrence in Louisiana. This may be attributable in part to its similarity to the Laughing Gull. From the latter, adult Franklin Gulls differ in having a considerable amount of white toward the tips of the flight feathers (fig. 81.) In first winter plumage they usually have a whiter breast and forehead than Laughing Gulls of comparable age, but this distinction is not always reliable. Although I would advise against attempting positive field identification of immatures of this species, the relative proportions of the bills are possibly a distinguishing character, particularly when the two species can be directly compared (see figure 82).

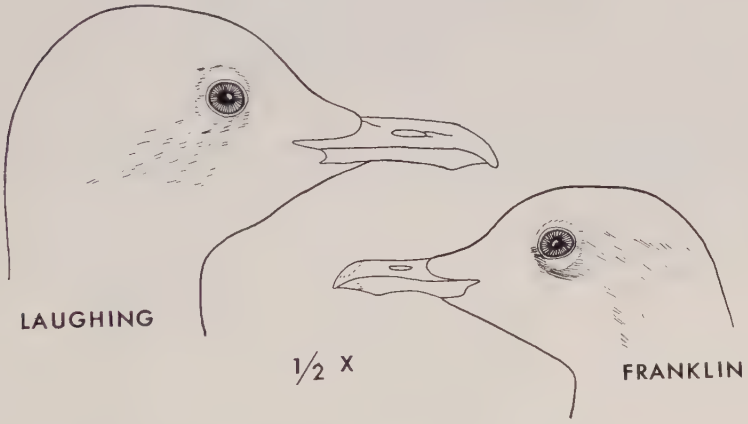

FIG. 82. Heads of Laughing Gull and Franklin Gull, showing particularly the differences in the size and proportion of the bills.

Records in fall extend from September 25 to November 8 and have included flocks numbering 20 individuals at Shreveport, 37 at False River, and as many as 75 on the Sabine National Wildlife Refuge. Winter and spring migration occurrences are scattered and irregular and all are from the southern half of the state. The late E. A. McIlhenny stated that just prior to 1880 the Franklin Gull "passed over Avery Island each fall in unbelievably great numbers . . . in long, compact streams, requiring an hour or more to pass."

Since even now the bird migrates regularly in the vicinity of Rockport, Texas, in flocks numbering into the "tens of thousands," I cannot help but wonder if Mr. McIlhenny's recollections were based not upon a normal, recurrent phenomenon, but on a few episodes, when the great southward flights happened to be shifted eastward by the weather to the meridian of Avery Island.

BONAPARTE GULL. *Larus philadelphia.* Pl. XVIII; p. 288

This is our smallest gull, one that is considerably smaller even than several kinds of native terns. In winter plumage the adult, like all black-headed gulls, loses most of the black on the head. It retains only a wash of gray on the nape and a distinctly defined dusky spot back of the eyes. The species is easily recognized, nevertheless, by this spot and by a conspicuous elongated white area extending from the "wrist" almost to the tip of the wings. Immatures have a dusky spot back of the eye, a narrow black terminal tail band, a black rear border to the outspread wing, and white "wrist" marks.

The species is altogether a migrant and winter resident, arriving the second week of October and remaining until mid-April, only rarely later. In some years it is not uncommon in winter on our larger inland lakes; in other years it may be rare or even unrecorded. A few are usually to be found any day in winter one spends by the seashore, especially if one watches the waters well beyond the breakers with binoculars or a telescope. The Bonaparte Gull is definitely more pelagic than most of its tribe.

BLACK-LEGGED KITTIWAKE. *Rissa tridactyla.* Fig. 83

The Black-legged Kittiwake is a medium-sized gull that has the hind toe absent or rudimentary. It breeds on the Arctic islands south, in eastern North America, to the St. Lawrence River. In winter it is mainly pelagic, spending most of its time well offshore and only rarely ranging farther south than the latitude of New Jersey. Consequently, the discovery of an immature individual on the front beach one mile south of Cameron on January 2, 1954, came as a great surprise to Louisiana ornithologists. This was the first definite record of a kittiwake for the Gulf of Mexico or for any of the lands immediately adjacent to that body of water. Fortunately, the bird lingered near the place where it was first seen and was collected on the following day. On April 18, 1954, a second kittiwake, also an immature, was shot at the west jetty at the mouth of the Calcasieu River, not more than two miles from the place where the first

individual was found. The specimens now repose in the Louisiana State University Museum where they can always be inspected by anyone wishing to verify the correctness of the identifications.

The immature, first winter plumage of the kittiwake is a study in contrast, as will be noted by Figure 83. The general color is white or pearl-gray, but the back of the neck, the median upper surface of the wings, and the end of the tail are all broadly banded with black, giving the bird a most striking appearance. In this plumage it resembles the winter-plumaged Bonaparte Gull, from which it differs by its much larger size (near that of the Laughing Gull) and in the distribution of the black areas when viewed from above. There is a broad black bar on the hind neck instead of a black spot back of the eye. The adult kittiwake is recognized by its black-tipped wings (in which the black is cut straight across as if the feathers had been dipped in black paint), by its black legs, and by its uniformly dull yellow bill.

FIG. 83. Black-legged Kittiwake: adult on left; immature on right.

Adult and Subadult Ring-billed Gulls ALLAN D. CRUICKSHANK

Gulls and Terns Throng Our Beaches in Winter ALLAN D. CRUICKSHANK

A Vociferous Adult Herring Gull ALLAN D. CRUICKSHANK

Subadult Ring-billed Gull ALLAN D. CRUICKSHANK

Immature Bonaparte Gull in Winter ALLAN D. CRUICKSHANK

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Royal Tern in Winter ALLAN D. CRUICKSHANK

Forster Tern on Nest in the Marsh ALLAN D. CRUICKSHANK

Least Tern on "Nest" ALLAN D. CRUICKSHANK

GULL-BILLED TERN. *GELOCHELIDON NILOTICA* Fig. 84

This is a common medium-sized tern with an unusually heavy, black bill, which is its main distinguishing feature. Relative size, however, means little as a guide to field identification until the student is familiar enough with some of the common species in a group to be able to use them as standards of reference. For example, among the terns, if the student can acquaint himself with either the Caspian or the Royal Tern as one of a "large species," and the Least Tern as a "small species," rapid progress can be made in working out the identity of related species in the group. On this principle, a "medium-sized" tern would denote a bird not as large as the Royal Tern but also not as small as the Least Tern.

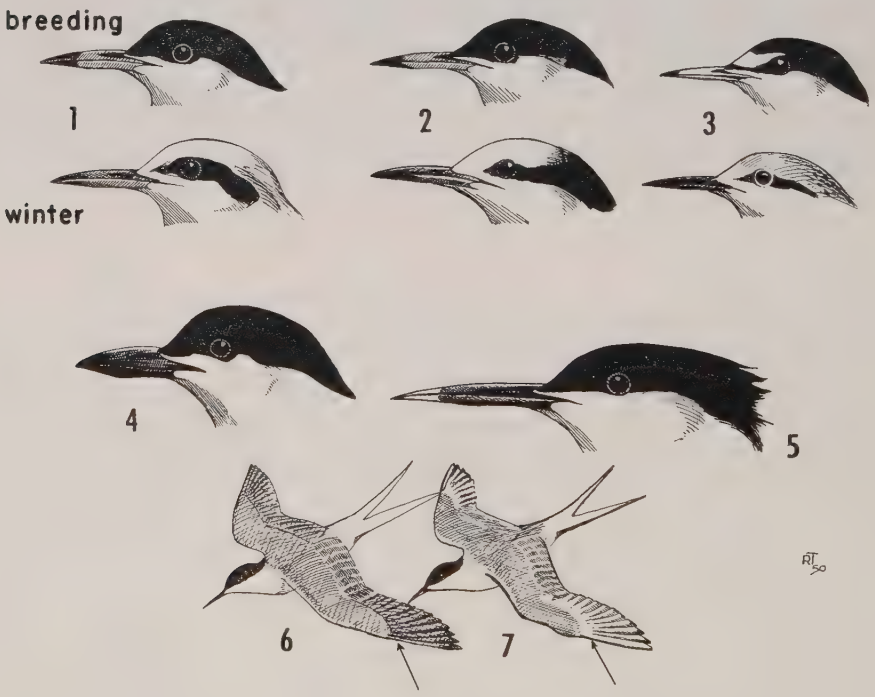


FIG. 84. Heads of five terns: (1) Forster Tern; (2) Common Tern; (3) Least Tern; (4) Gull-billed Tern; (5) Sandwich Tern; and (6) Common Tern in flight; (7) Forster Tern in flight.

The Gull-billed Tern is strictly coastal in its distribution, but within this general environment it has a strong preference for the marshy areas, where it frequently is seen feeding in winter. The bird loses the black cap after the breeding season and becomes, in winter plumage, the whitest of our terns. This feature, along with its thick bill, makes it rather easily recognized.

The status of the species in summer requires additional study, for there are few records of it at that time and a nest found on Isle au Pitre on June 10, 1941, is the only positive evidence of its breeding in our state. The three eggs were buffy-white, indistinctly splotched with numerous chocolate markings, and were laid in a simple depression in the sand.

FORSTER TERN. *STERNA FORSTERI.* Fig. 84; p. 289

The Forster and Common Terns are not easily distinguished in the field, but identifications can be made with accuracy, provided a combination of characters is employed. In spring and summer the Forster Tern differs from the Common Tern by the orange instead of orange-red base to its bill and by its

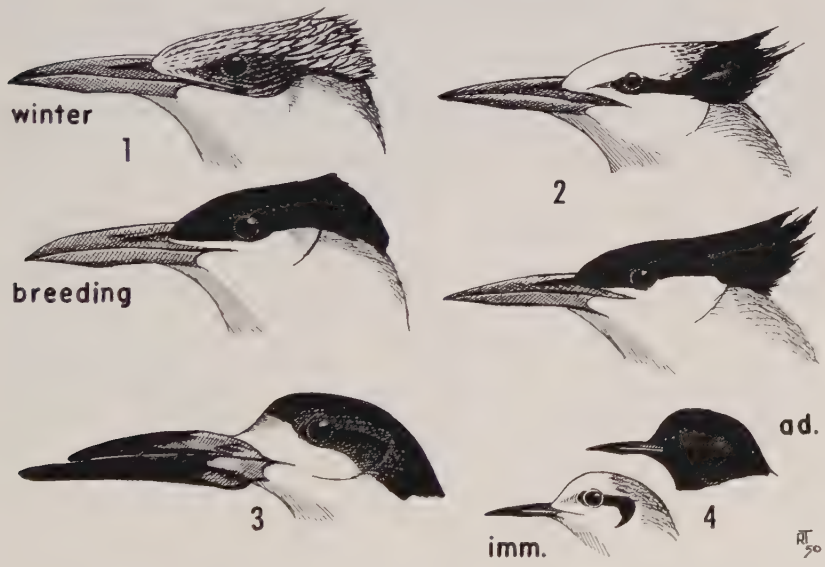


FIG. 85. Heads of four terns: (1) Caspian Tern; (2) Royal Tern; (3) Black Skimmer; (4) Black Tern (adult above, immature below).

silvery instead of dusky primaries or flight feathers; in the Forster Tern the primaries are lighter colored than the remainder of the wing, whereas in the Common Tern they are darker. In fall and winter, the black patch through the eye of the Forster Tern extends only to the auricular region, while in the Common Tern this black mark passes completely around the back of the head. In periods of molt, in late summer and early spring, however, during the transition between the two plumages, Forster Terns briefly exhibit a condition in which the black patches on the sides of the head are connected across the nape, much as in the Common Tern. Immature Common Terns have the fore part of the wing dusky, and this is an excellent field mark. In the hand the two species may be further distinguished by examination of the outer tail feathers. In the Forster Tern the outer web is white, the inner web gray or dusky; in the Common Tern, the reverse is true.

The Forster Tern is a common permanent resident in coastal Louisiana. Elsewhere in the state it is a migrant and winter resident, between the extreme dates of July 23 and May 17. It breeds fairly abundantly on the coast, laying its three (sometimes four) heavily spotted buffy or olivaceous eggs in a fairly well-constructed nest of grasses and the dried stalks of marsh plants, either in the mainland marsh or on small grassy islands in bays and lagoons. The building of a nest is rather exceptional for terns. Generally the eggs are placed in a scooped-out depression in the sand. Sometimes Forster Terns nest in groups consisting of a few pairs in fairly close proximity, but more frequently pairs are found scattered here and there.

COMMON TERN. *Sterna hirundo.* Fig. 84

This tern, which closely resembles the preceding species (see that account for distinguishing differences), is a moderately common migrant and winter resident in Louisiana. Although sometimes it is locally numerous in migration, its total numbers in the state never begin to approach those of the Forster Tern. Some authors have stated that it breeds on the coast of Louisiana, but there is no definite evidence to support this contention. It has been observed and collected on the coast as late as June 28, but the sporadic presence of individuals during the nesting season is particularly unreliable as evidence of breeding in the case of birds of this order. Migrants from the North begin to arrive in August and September and are frequently seen on inland lakes during October. Spring migrants have not been recorded inland later than March 11, although they should occur much later than this date.

ROSEATE TERN. *STERNA DOUGALLII.* Fig. 86

Although this beautiful tern breeds in widely scattered colonies from coastal Nova Scotia to coastal Texas, there is but one record of the species from Louisiana—a somewhat unsatisfactory one at that. A specimen was allegedly collected at Grand Chenier in February, 1915, but it is not known now whether this specimen, which apparently is no longer extant, was ever examined by an ornithologist thoroughly familiar with the diagnostic features of the Roseate

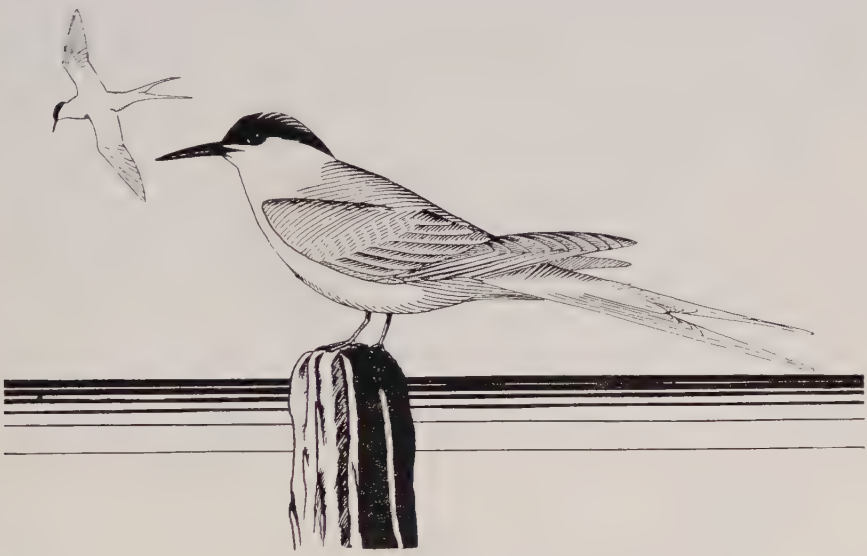


FIG. 86. Roseate Tern.

Tern. Under the circumstances, I am almost inclined to remove the species from the list of the birds of this state until unequivocal evidence of its occurrence here is obtained. It should, however, occur at least casually in the state and probably has escaped detection simply because there are always so many terns on our coast that it is virtually an impossibility to study critically each one seen in the course of a day.

The Roseate Tern is best separated from the Common and Forster Terns, species that it closely resembles in size and color, by its extremely long, deeply-forked tail. When the bird is at rest, its tail extends well beyond the tips of

the folded wings, while in the other two species the tip of the tail does not extend beyond the tips of the wings. The call notes of the Roseate Tern are said to be very diagnostic, a two-syllabled *chu-ick* that is uttered rather constantly and a rasping *aaaak*. In color the bird is whiter above than either the Common or Forster Tern, but this distinction is useful only when there is opportunity for making direct comparisons. The bill in summer is sometimes entirely black, but generally it is dull red at the base, as prominently so as is the base in the Common Tern; the base of the bill in the Forster Tern is orange instead of red. In winter the forehead and anterior portion of the crown of the Roseate Tern become white, leaving the greater part of the area around the eye and the nape and back of the head black. Thus it remains darker headed than either the Common Tern, which has the whole top of the head white, or the Forster Tern, in which even the nape is white.

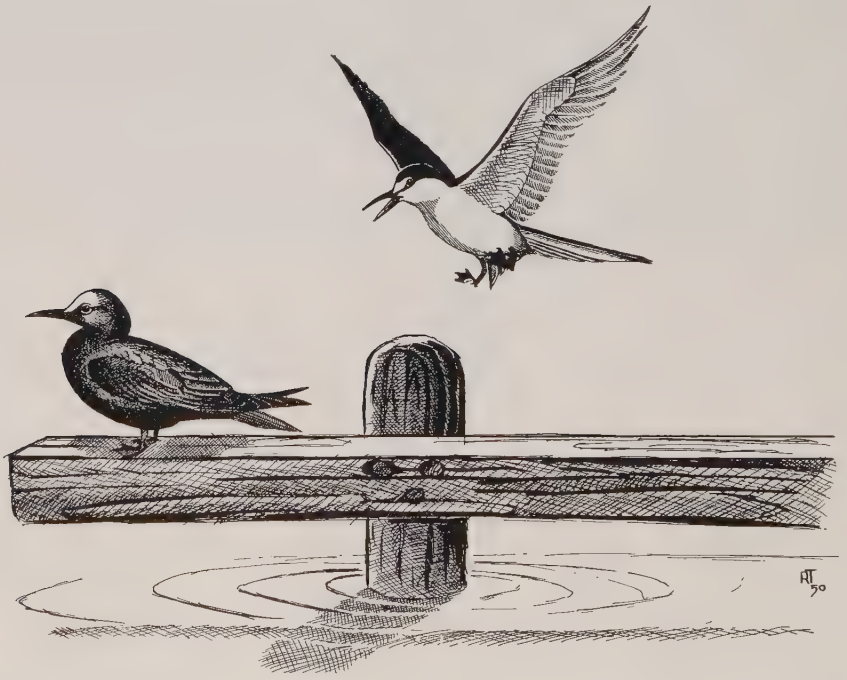


FIG. 87. Two pelagic terns that are rarely seen in Louisiana: Noddy Tern on left; Sooty Tern on right.

SOOTY TERN. *Sterna fuscata.* Fig. 87

The Sooty Tern possibly at one time nested sparingly but regularly on the outer islands along our coast. There have been no records, however, since June 5, 1933, when two were collected on Curlew Island in the Chandeleur Chain. It is pelagic in its feeding habits but must necessarily come to land to lay its eggs and rear its young. The desolate sandspits known as the Dry Tortugas, sixty-five miles west of Key West, are one of the main nesting sites of the Sooty Tern in the Western Hemisphere. From some still unknown winter quarters over 100,000 individuals normally return each spring to carry on their family duties on the Dry Tortugas, and when this is done, they disappear. Paradoxically, a set of carefully conducted experiments by two capable scientists showed that Sooty Terns cannot long remain afloat because their feathers rapidly become soaking wet. It seems therefore unlikely that the birds rest or sleep on the open waters of the ocean during the period of their absence from the nesting islands. But where they go is still a mystery.

This species and the Noddy, which also breeds in numbers on the same islands, should be looked for on the northern Gulf Coast following tropical hurricanes, which usually sweep northward across the Gulf from the direction of these birds' domain. The Sooty Tern is the only tern on the central-northern Gulf Coast that is solid black above and immaculate-white below.

LEAST TERN. *Sterna albifrons.* Fig. 84; p. 289

The Least Tern is the "runt" of its tribe; indeed, it is one of the smallest terns in the world. The body, tail and all, is hardly more than eight inches in length. In summer the bird has a black cap, like other terns, but its nearly all-yellow bill (only the tip is black) is unique. Immatures and winter-plumaged adults have dark bills and a dusky patch from the eye around the back of the head.

The Least Tern has been seen a few times in winter along our coast, but mainly it is a migrant and summer resident that arrives in April and remains until October. It is the commonest of our terns in summer, nesting in colonies on many of our coastal islands, on sandy patches along our coastal highways, and on sand bars inland along our rivers. The so-called "nest" is nothing more than a depression in the sand in which three or four creamy eggs with dark blotches are laid. Some terns, such as the Royal and Caspian, prefer to nest in mixed colonies in which two or more species are associated. But Least Tern colonies more often than not are isolated from other species, although occasionally, in coastal situations, there may be Black Skimmers nearby.

ROYAL TERN. *Thalasseus maximus.* Fig. 85; p. 288

This large species and the even larger Caspian Tern are both common on our coast, where they are permanent residents. To distinguish between the two is not easy unless one knows just what to look for. The color of the bill is not an infallible character, but generally the Royal Tern has a more slender and more orange-colored bill, while the bill of the Caspian Tern is heavier and more intensely red in color. The Royal Tern has a deeply-forked tail (outer feathers three inches longer than the ones in the middle); the tail of the Caspian is only shallowly indented. In winter the forehead of the Royal Tern becomes white, while that of the Caspian Tern retains a considerable amount of black and the black around the eye is much more extensive.

Colonies of Royal Terns, frequently numbering into hundreds of pairs, are found on our sandy coastal islands or on some isolated strand of Gulf beach. Generally this species nests in association with Caspian Terns, Laughing Gulls, Black Skimmers, and, at least from Grand Isle eastward, with the Sandwich Tern. The nest of the Royal Tern is a shallow depression in the sand in which only one egg is laid. The ground color of the egg is gray or slightly buffy and is profusely and evenly overlaid by small dark spots.

In winter the Royal Tern often travels short distances up the bayous and larger rivers in the southern part of the state, but these wanderings have never, so far as we know, brought one as far inland as Baton Rouge.

SANDWICH TERN. *Thalasseus sandvicensis.* Fig. 84

The Sandwich or "Cabot" Tern is a rare to locally common summer resident and breeder and a rare winter resident on the coast of Louisiana. It nests on sandy islands, usually in company with other terns and the Laughing Gull, placing its eggs in saucerlike depressions in the sand. The two (sometimes one or three) eggs are pinkish buff with brown, gray, and lavender markings. In 1941 there were approximately two dozen pairs and their young on Isle au Pitre and about the same number on North Island. There must also be a colony near Grand Isle, for a few individuals can be seen there daily in June.

The Sandwich Tern is classed as a medium-sized tern, along with the Forster Tern, although actually it is intermediate between the Forster Tern on the one hand and the Royal Tern on the other. The Sandwich Tern is, however, the only tern with a yellow-tipped black bill, a character that immediately distinguishes it from all other species. The black on the top of the head is

partially replaced with white in the molt that follows the breeding season—the fore part of the crown becomes white, streaked with black, and the back of the head and the nape become black, streaked with white.

CASPIAN TERN. *HYDROPROGNE CASPIA.* Fig. 85

The features that distinguish this species from the similar-appearing Royal Tern have already been discussed in connection with the latter and need not be repeated here. The Royal Tern is strictly coastal in its occurrence, but the Caspian Tern breeds in part on the Great Lakes and therefore passes up and down the Mississippi Valley in migration. From the third week of March to mid-May and from early August to mid-October it may be seen about our large inland, fresh-water lakes and along our larger rivers. There are sizeable breeding colonies on some of the islands along the coast of Louisiana such as, for example, Isle au Pitre and North Island. Two to four creamy-white eggs, scrawled and spotted with numerous chocolate-colored markings, are laid in a depression in the sand.

The Caspian Tern is definitely partial to the marshes instead of the front beaches, especially in winter. On the highways leading to or along the coast, through the great coastal marshes, Caspian Terns are often seen feeding up and down the canals along the roads or out over the marsh itself. The large terns observed along the Gulf beaches are predominantly Royal Terns.

BLACK TERN. *CHLIDONIAS NIGER.* Fig. 85

The Black Tern in summer plumage is our only tern that is predominantly dark gray above and black below (only the under tail coverts are white). Thus it cannot be confused with any other species except possibly the brown immature of the very rare Sooty Tern. The head, breast, and belly are black and the upper parts are very dark gray. The black crown and the black under parts become white in the postnuptial molt. Since the first migrants to return from the North are still in the process of their transformation, they are usually heavily blotched beneath. The immature of the year has a light breast and belly, dusky flanks, a white collar, and a black crown and nape. Such immatures may suggest the Sooty Tern; but the latter is larger, immaculate-white below, black instead of gray above, and the tail is deeply instead of slightly forked.

The Black Tern breeds in the lake marshes of our northern states and in southern Canada. Spring migrants begin to pass through Louisiana in rather

large numbers in late April or early May and are seen regularly until about the end of the first week of June. Along the coast, however, the species occurs in numbers as a nonbreeder throughout the summer. Southward migration, as evidenced particularly by the appearance of juveniles, commences in July and continues into September and sometimes into October (single birds recorded on November 2, 1941, and December 6, 1942, near Cameron). There is only one definite midwinter record for Louisiana. Ordinarily the species leaves the United States entirely to spend the winter in southern South America. Harry C. Oberholser saw a single bird at the Pass a Loutre Hunting Club on January 23, 1932.

NODDY TERN. *Anoüs stolidus.* Fig. 87

This pelagic tern has only once been definitely recorded in Louisiana—following a tropical storm on August 30, 1940, that rolled across the Gulf from the general direction of the Dry Tortugas, where the species is abundant in the breeding season. Its coloration, unique among terns, is a uniform dark dusky-brown except for the sharply contrasting white crown. Furthermore, unlike other terns, it has a rounded instead of a forked or emarginate tail.

Louisiana ornithologists should be on the watch for the Noddy Tern following any tropical disturbance that strikes the northern Gulf Coast. The species gets its name from the peculiar manner in which it nods its head in courtship antics in the vicinity of its nest.

The Skimmer Family:

Rynchopidae

BLACK SKIMMER. *Rynchops nigra.* Fig. 85; p. 16

The skimmers are large, long-winged, tropical, ternlike birds in which the lower half of the greatly compressed bill is longer than the upper half. With the knifelike edge of its lower mandible cutting the surface of the water of coastal bays and lagoons, the skimmer scoops up the tiny fish that form its diet. The scissor shape of the bill is the basis of the name *bec a ciseaux*, by which it is known among our French-speaking inhabitants. The call note is a houndlike *yap, yap*, from which another local name, "sea dog," is derived.

The Black Skimmer is strikingly colored, with its black upper parts, white under parts, and bright red, black-tipped bill. It is a common permanent resident, exclusively coastal in its normal distribution, although once after a hurricane a single individual appeared as far inland as Baton Rouge. It nests in large colonies on sandy beaches, where it lays its four or five chalky white, heavily-blotched eggs that blend perfectly with the mixture of pebbles, broken shells, and debris that litters a seabeach.

The Auk Family:

Alcidae

The auks and auklike birds of the family Alcidae are mainly denizens of northern oceans, over which they wander far and wide throughout most of the year. In the summer, however, they come to land, generally to form immense colonies and to raise their young either in burrows, in rocky crevices, or on narrow ledges alongside the sea. Their black-and-white patterns and their upright postures suggest penguins, which, however, occur entirely in the southern hemisphere and are flightless birds only remotely related to alcids. The auk family includes the puffins, guillemots, murres, murrelets, auks, auklets, and the Dovekie.

Alcids are heavy-bodied, somewhat ducklike, birds with short, rounded wings, which they beat in flight in a rapid whir and with much veering of their course. Even though the legs are extremely short, they are located far to the rear of the body and hence in flight extend beyond the tail where they are held spraddle-fashion. Alcids dive and swim with great agility, pursuing under water the various marine organisms that comprise their diet. So extreme were the adaptations of the Great Auk, the largest known member of the family, to a life in the sea that it lost its power of flight. This ultimately led to its extinction at the hands of unscrupulous men who slaughtered it for food and feathers when it waddled out of the ocean onto land to nest.

ANCIENT MURRELET. *Synthliborhampus antiquus.* Fig. 88

The alcids are so restricted to cold ocean waters that on our Atlantic Coast it is only the little Dovekie that ever occurs as far south as Florida and the entrance to the Gulf, and then only on the occasion of exceedingly rare southward invasions involving a large segment of the population of the species.

It was, indeed, the Dovekie that until recently constituted the only representative of the auk family in Gulf waters—the species has been recorded a few times in the vicinity of the Florida Keys and even once on the northern Gulf Coast, at St. Andrews Bay, Florida. We might thus have expected the Dovekie to be the first alcid to appear in Louisiana, but such was not the case. On May 6, 1954, a small, plump bird, about the size of a "di-dipper," was seen by a fisherman on the waters of Lake Pontchartrain, just north of Littlewoods, on the eastern outskirts of New Orleans. The little bird swam up to the fisherman's skiff and was lifted aboard only to succumb shortly thereafter. Fortunately the specimen was taken to the Wild Life and Fisheries Commission, which later transmitted it to the Louisiana State University Museum for permanent preservation. The bird proved to be an Ancient Murrelet, a Pacific Coast species that breeds in the faraway Aleutian Islands and other shores of the North Pacific. Although there are single records of the occurrence of the Ancient Murrelet in Idaho, Ontario, Quebec, Wisconsin, and on Lake Erie, never before has it or any other Pacific Coast alcid reached the waters of the Gulf of Mexico.

The present species is very similar to the Dovekie but differs in being slightly larger, in having the upper parts gray instead of black, and in possessing a longer and thinner bill, instead of one that is stubby and conical in shape. Both have most of the head and throat black in the breeding season, but in the Ancient Murrelet there is a white line on each side of the head, beginning at a point above the rear of the eye and converging on the nape. This white mark is the basis of the bird's name. In winter both species lose the black throat but the murrelet retains a small dusky patch on the chin, and the top of its head is dark gray instead of black.

Fig. 88. Ancient Murrelet.

PIGEONLIKE BIRDS

Order *Columbiformes*

The Pigeon Family: *Columbidae*

The pigeon family is poorly represented in the United States, but it achieves great diversity in the tropical regions of the world, a fact well known to every "G. I." who saw service in such places as the Philippines and the southwest Pacific. Pigeons are peculiar birds in many respects. Their bills are soft and fleshy; their heads are disproportionately small in comparison with their bodies; and they possess in their necks specialized glands that secrete the so-called "pigeon-milk," which they feed to their young by regurgitation.

The famous and now extinct Dodo was a kind of flightless pigeon that lived on the islands of Mauritius, not far from Madagascar. The species was exterminated by early French explorers who beat the helpless birds down with clubs to provide themselves with food. Not a single specimen of the Dodo is extant in the museums of the world, and our conception of its appearance is based mainly on several somewhat contradictory drawings made by the early seamen and travelers, who were responsible for the bird's extinction.

BAND-TAILED PIGEON. *Columba fasciata.* Fig. 89

This large Rocky Mountain pigeon has been recorded only once in this state—on January 21, 1954, when an adult female was obtained by John Thibaut one mile south of Napoleonville. The species is ordinarily found in high mountain forests, even during its migrations and in its winter range. It has been recorded once in North Dakota and once in Oklahoma, but otherwise the recent Louisiana record is the first time it has been detected away from a mountainous habitat. The individual killed at Napoleonville had been observed for approximately two weeks in a large pecan orchard and in a nearby grove of live oaks. It was never seen in the company of other birds, nor was

it unduly wary. Finally it was shot by a group of rabbit hunters and retrieved by Mr. Thibaut, who, recognizing it as an unusual bird, transmitted it to the office of the Wild Life and Fisheries Commission in New Orleans. It was then forwarded to the Louisiana State University Museum of Zoology, where it is now preserved. On being skinned it was found to possess little fat but otherwise to be in apparently good physical condition.

The Band-tailed Pigeon is only slightly smaller than the Rock Dove, the common pigeon of our city streets. Its color is predominantly slate-gray, but the tail is crossed by a band of dusky-gray and there is a somewhat crescent-shaped spot of white on the lower nape. Like the Rock Dove, it has tail feathers of nearly equal length, which make the tail "squarish" terminally, instead of pointed as in the Mourning Dove.

Fig. 89. Band-tailed Pigeon.

ROCK DOVE. *Columba livia.* Fig. 90

The familiar Rock Dove, or domestic pigeon as it is more often called, is now highly variable in color as a domesticated bird. But it was originally predominantly slate-gray with iridescent patches, a condition that still prevails in most of our present-day stock. No wild dove in Louisiana other than the once-recorded Band-tailed Pigeon remotely resembles it. Since there is evidence that domestication of this species was accomplished as early as 3000 B. C., it is a bird with which man long has been intimately acquainted. Yet, despite its usual dependency on man in one way or another, it has established itself under semiferal conditions in many of the towns and cities of Louisiana. In fact, there are instances in the western part of the United States of the domestic pigeon reverting to a completely wild state and building its nest on ledges and in crevices in isolated canyons, far from human dwellings.

The "carrier pigeon," as one breed of the domestic pigeon is called, is innately capable of remarkable "homing" feats. When carefully bred with this purpose in mind and given special training, it will fly unerringly and rapidly for great distances to return to its cote, and hence it can be used to transport messages. Despite recent improvements in nearly all phases of electronics and other means of communication, the Signal Corps of the Armed Services is said still to regard the domestic pigeon as its most dependable message conveyer under certain circumstances.

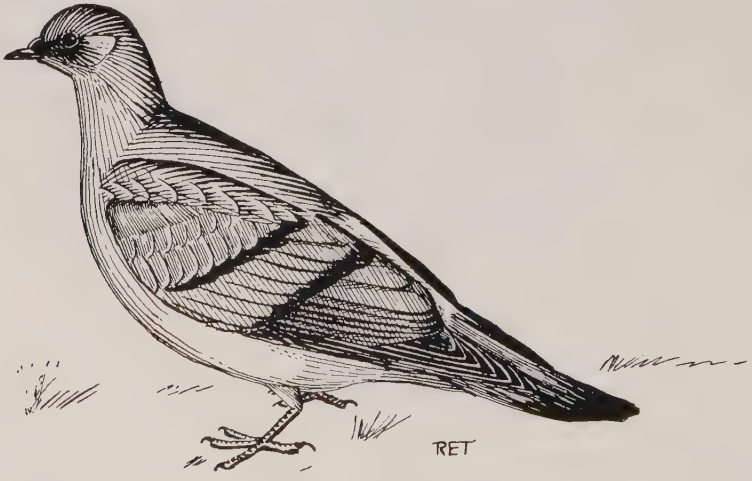


Fig. 90. Rock Dove.

Explanation of *Plate XIX*

Doves

1. Mourning Dove (p. 305). **2.** Ground Dove (p. 307). 3. White-winged Dove (p. 307).

MOURNING DOVE. *Zenaidura macroura.* Pl. XIX

This species is one of Louisiana's commonest permanent residents and one of its most highly esteemed game birds. It is smaller than a domestic pigeon and has a long, pointed (instead of fan-shaped) tail with white outer feathers. The Mourning Dove gets its name from its mournful "cooing" note, which, in the breeding season, is uttered almost continuously throughout the day. The nest is a flimsy platform of sticks and grass stalks so open in construction that it barely suffices to hold the two pure white eggs. Rarely is this structure located on the ground and even more rarely near the top of a tall tree; most frequently it is placed at a height of ten to twenty-five feet. The bird raises on the average two broods a year, the last sometimes being fledged as late as September or rarely as late as early October. Consequently, when the hunting season is set to begin in September, as is sometimes done, Louisiana hunters run the risk of killing a high proportion of local birds not long out of the nest.

A popular misconception is the idea that Louisiana gets an invasion of "large, western doves" late in the fall. No highly significant geographical size difference has been demonstrated in the dove population of the United States—certainly none detectable in the field. Furthermore, banding returns clearly show that our migratory doves come mainly from Ohio, Indiana, Michigan, and adjoining states to the east, and that we get only a sprinkling of doves from as far west as even Iowa or Kansas.

PASSENGER PIGEON. *Ectopistes migratorius.* Fig. 91

The story of the Passenger Pigeon has been told many times, but it should be repeated over and over again, if only to remind us continually that even the most abundant of our natural resources must never be regarded as inexhaustible—that wise use and management are essential if our generation is to pass on to the next the heritage it received from the generations that went before. There was a time, not so very long ago, when this fine North American bird was so abundant that in migration it passed in flocks that numbered into the millions—flocks that darkened the sky and that, by cutting off the sun's rays, cast huge shadows on the earth. In its nocturnal roosts the limbs of trees would break under the sheer weight of the birds perched on them. Indeed, it is difficult to imagine a bird as common as this becoming quite suddenly extinct, but that is what happened; and it will happen again with other species unless we are alert to the dangers that beset wild creatures under the impact of civilization.

The Passenger Pigeon resembled our Mourning Dove, but it was considerably larger in bulk, had a much longer tail, and was blue-gray instead of brown on the head and back. Because of their greater size, "wild pigeons" were even more highly esteemed as food than were Mourning Doves; and this is the primary factor that led to their destruction. At the height of their exploitation for the market, hundreds of *barrels* of their bodies were shipped daily into New York City alone. Men with torches and sticks invaded the roosts and even the nesting rookeries to lay low thousands of birds in a single night.

The Passenger Pigeon had a very low reproductive potential (see discussion under Bobwhite); it laid one or, rarely, two eggs. This low breeding rate was sufficient to maintain high populations only as long as some extraneous decimating factor was not introduced. Man and the unbelievable slaughter he engineered proved to be this critical factor. With its largest breeding colonies disrupted, with its young often left to die in the nest, and, at the same time, with many natural decimating forces still operating against it—disease, predators, weather, and perils of migration—the Passenger Pigeon suddenly became rare and then extinct. Apparently the last individuals to be seen in Louisiana

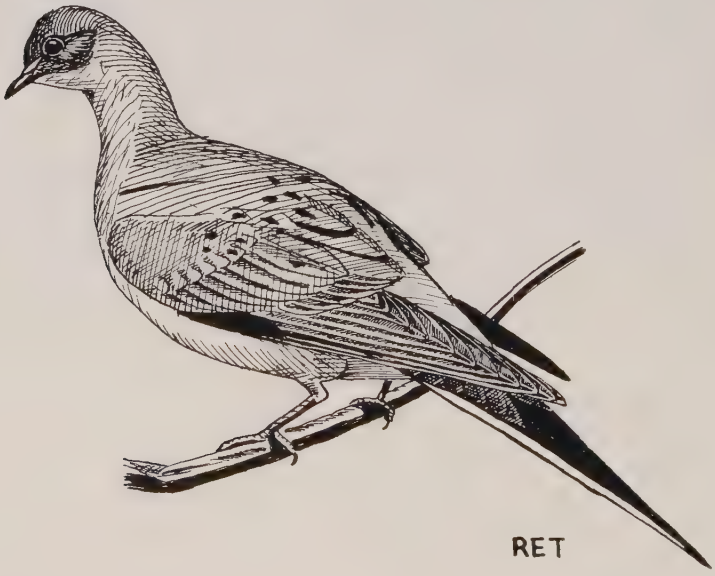


FIG. 91. Passenger Pigeon.

were a few observed in the vicinity of Prairie Mer Rouge, in Morehouse Parish, in the winter of 1902-1903. The species passed completely from the face of the earth on September 1, 1914, when a captive bird died in the Cincinnati Zoological Park.

WHITE-WINGED DOVE. *Zenaida asiatica.* Pl. XIX

This infrequent visitor to Louisiana from Texas resembles the Mourning Dove but has a conspicuous white patch in its wing, a somewhat greater body bulk, and a squarish, instead of pointed, tail. It has been observed only once in northern Louisiana (one seen by Horace H. Jeter on May 1, 1949, near Shreveport). The species is most often encountered in localities not far from the Gulf Coast. Extreme dates of occurrence in the state are from April 12 to June 29 and from October 31 to January 1, with one indefinite record for August and a single record for September (one shot at Torras, Pointe Coupee Parish, September 25, 1954). Twice in late April in Cameron Parish I have found White-winged Doves that I suspected might be nesting there, but I have never been able to find a nest, even though cooing males were involved in both instances.

GROUND DOVE. *Columbigallina passerina.* Pl. XIX

This small dove, which is not much larger than a House Sparrow, is an uncommon to locally common winter resident and a rare summer resident in Louisiana. Although a Ground Dove's nest has never been found in the state, paired individuals have been seen in the southern part of the state on several occasions during the breeding season. It almost certainly nests on the wooded ridges along the coast near Johnson Bayou, in Cameron Parish, for numerous pairs have been seen there in spring and summer. But several unsuccessful searches have been made there for its nest, which is said to be a delicate structure made of fine rootlets and grasses, saddled on a limb or placed amid leaves on the ground, and with scarcely any depression for the two white eggs.

The Ground Dove is grayish brown above and vinaceous below; its short, nearly square tail is black; and, in flight, the wings flash rufous-red. In the winter it is seen frequently in some sections of southern Louisiana and is especially numerous in old cane fields and clearings near Carville, although a few miles to the north at Baton Rouge it is decidedly uncommon. There are records somewhere in the state in every month of the year. The call is a one-syllable *woo, wooo*, with a slight rising inflection. The Ground Dove is a

rather comical little bird as it walks along the ground nodding its head back and forth.

INCA DOVE. *Scardafella inca.* Fig. 92

The Inca Dove is a very rare visitor from western and southern Texas. It is somewhat larger than a Ground Dove but considerably smaller than a Mourning Dove. The color is light grayish with numerous horizontal black markings that produce a scaled effect. The tail is long and narrow, and the outer feathers are white tipped. The only three records for the state are of birds found near Alexandria on December 28, 1935 (collected); at Farmerville, on November 19, 1936; and at Belcher, on April 25, 1943.

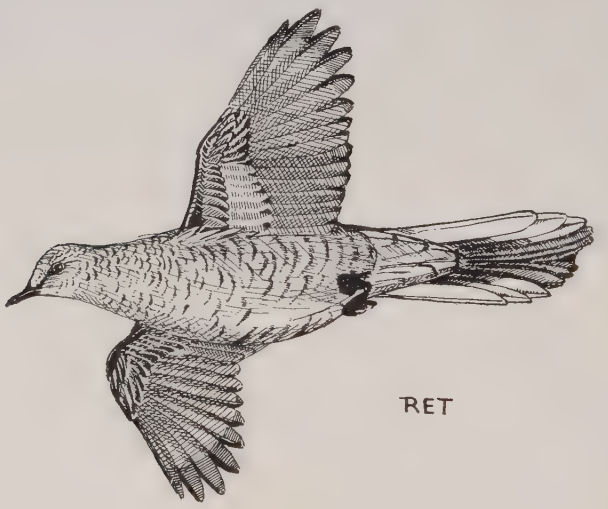


Fig. 92. Inca Dove.

PARROTS

Order *Psittaciformes*

The Parrot Family:

Psittacidae

CAROLINA PARAKEET. *Conuropis carolinensis.* Fig. 93

The Carolina Parakeet once roamed in flocks over most of Louisiana, but none have been recorded here with certainty since 1880, and it is unlikely that any remain elsewhere. The factors that led to its extermination are clear. Despite its resplendent beauty, adorned as it was with body feathers of vivid green, a head of yellow, and an area of flaming scarlet surrounding the base of the bill, the bird was a rogue. It ate the farmer's corn and raided his orchards, destroying almost every kind of fruit indiscriminately. Consequently, it was slaughtered in enormous numbers at every opportunity. Moreover, because its flesh was palatable, it was hunted as game. Professional bird catchers procured thousands of parakeets for sale as pets, and still more were obtained for the millinery trade.

The birds' fatal habit of not deserting a fallen comrade often led to the killing of every individual in a flock as the surviving members hovered over their stricken companions. So great was the parakeets' unpopularity that Audubon tells of seeing "several hundred destroyed in this manner in the course of a few hours." As early as Audubon's time the bird was rapidly decreasing in numbers, for in 1842 this famous naturalist lamented its scarcity in places where twenty-five years before it had been plentiful. In 1881, however, F. W. Langdon, in writing about the birds of West Baton Rouge Parish, tells of flocks of two or three dozen individuals being seen in 1880 on the Cinclare Plantation, approximately opposite Baton Rouge; and C. W. Beckham reports a single bird was seen about that same year at Bayou Sara. The alleged oc-

currence of parakeets in the vicinity of Webster Parish, in North Louisiana, about 1900 is highly indefinite.

Parakeets formerly ranged from Florida, north along the Atlantic Coast to Pennsylvania and New York west to Wisconsin, Colorado, and Texas. The populations occupying the western part of the bird's range differed slightly from those in the east in being larger and less yellowish (more greenish) on the rump and hind neck but in having the yellow of the wings more pronounced and extensive. These western representatives of the species have often been referred to as "Louisiana Parakeets," since the scientific name given to the subspecies is *Conuropsis carolinensis ludovicianus*, a name bestowed by the Swedish naturalist, Gmelin, in 1788 on the basis of Le Page Du Pratz's description of the bird in his *Histoire de la Louisiane* (see page 25).

FIG. 93. Carolina Parakeet.

CUCKOOLIKE BIRDS

Order *Cuculiformes*

The Cuckoo Family: *Cuculidae*

The cuckoos and their allies are a large group of birds represented in the tropical or temperate regions of all the continents of the world. The members of this family in western Europe are notable for their parasitic nesting habits. Building no nests of their own, the females skulk here and there looking for nests with eggs at just the right stage. When the rightful owners are away, they slip in, take out one of the eggs already there, and deposit their own egg. Then they quietly sneak away to let their victim assume all the responsibilities associated with the incubation and care of the young cuckoo. Although American cuckoos do not parasitize other birds, it is noteworthy that they sometimes parasitize each other and that their nests are extremely fragile structures. The anis, which are aberrant cuckoos, often build communal nests in which two or more females lay their eggs together and share the chores of incubation. The Roadrunners are essentially giant cuckoos that have taken up a terrestrial existence.

YELLOW-BILLED CUCKOO. *Coccyzus americanus.* Fig. 94

The Yellow-billed Cuckoo, or "rain crow" as it is often called, is a common summer resident throughout most of Louisiana. It ordinarily arrives in early April and sometimes remains until after the first of November. The nest is a fragile platform of sticks, bits of grass, and bark, often so shallow and thin that the two to six unmarked pale bluish-green eggs are visible to one standing beneath the structure. Generally it is placed not much more than fifteen feet from the ground, in a tree on the edge of a clearing, in an open grove, or not infrequently adjacent to a human dwelling.

Cuckoos are slow and deliberate in their movements and sometimes alight on a limb and remain there almost motionless for several minutes. The yellow lower mandible, the rufous inner margins of the wing feathers, and the *extensive* white tips on the feathers of the long tail immediately distinguish this species from the Black-billed Cuckoo. The call is an unique, guttural *ka ka ka ka ka ka ka ka ka ka ka ka ka kow kow kowp —— kowp ——— kowp———— kowp.* Although the call is emitted continuously, day in and day out, there are many people who believe it is a sign of approaching rain—hence the name "rain crow." Cuckoos are highly beneficial birds since each one consumes thousands of caterpillars and other noxious insects in the course of a summer.

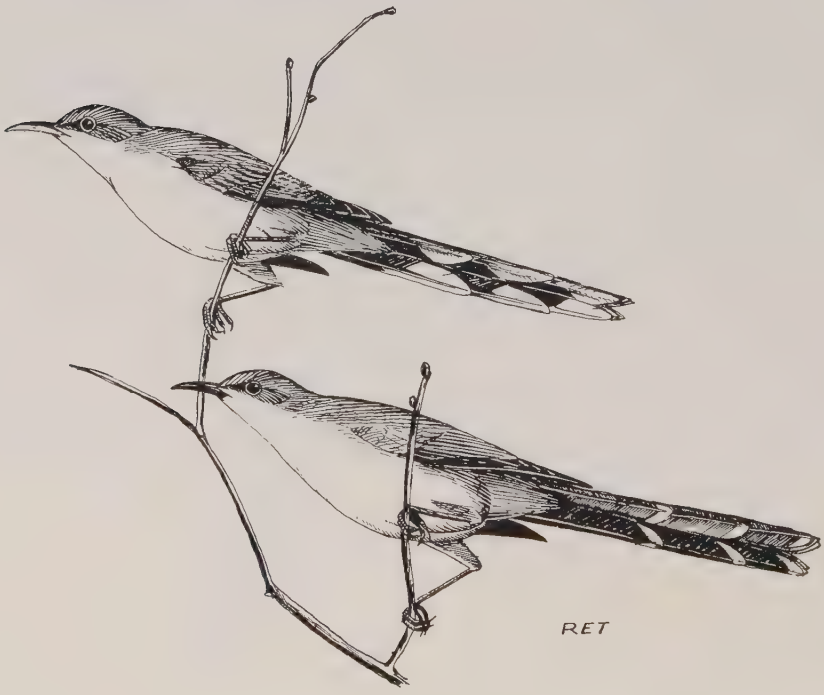


FIG. 94. Yellow-billed Cuckoo (above) and Black-billed Cuckoo (below).

BLACK-BILLED CUCKOO. *Coccyzus erythropthalmus.* Fig. 94

This species gets its name from the fact that its bill is uniformly black, while the previous species has a yellow lower mandible. It can be further distinguished by the lack of rufous in its wings and by the more restricted whitish tips of the tail feathers. The call note is a succession of three to five mellow notes—*cow cow cow.* The Black-billed Cuckoo is strictly a transient throughout the state, uncommon in spring and moderately common in fall; dates range from April 11 to May 20 and from August 24 to October 18.

Fig. 95. Roadrunner.

ROADRUNNER. *Geococcyx californianus.* Fig. 95

This interesting, ground-dwelling cuckoo only recently entered Louisiana, for when Oberholser wrote his *Bird Life of Louisiana*, published in 1938, he was unable to find a single satisfactory record of it in the state. But immediately thereafter the Louisiana State University Museum received reports of its occurrence near Shreveport and obtained a specimen that was shot in that vicinity and mounted by a taxidermist in Bossier City. Since that time the bird has increased rapidly and is now seen regularly throughout the year in numerous localities in the northwestern part of the state and is observed casually south to Vernon Parish. Several nests have been found. The latter, which generally contain three to five chalky white eggs, are huge structures of sticks and are usually placed in a bush or low tree.

The Roadrunner is well adapted by its long legs to a terrestrial existence, and it usually seeks safety by running instead of by flight. In the southwestern United States, where the species is common, it enjoys a good reputation because of its propensity for killing rattlesnakes.

SMOOTH-BILLED ANI. *CROTOPHAGA ANI.* Fig. 96

Anis are solid black, slightly iridescent cuckoos with immense, parrotlike bills. Superficially they resemble grackles, but one glance at the bill is sufficient to label an ani. This species lacks the grooves on the sides of the bill that characterize the next species.

The Smooth-billed Ani occurs normally in the West Indies, Yucatán, and Central and South America. For some inexplicable reason, however, it has appeared on several occasions in small numbers in the delta region below New Orleans but nowhere else on the whole northern Gulf Coast. It has been recorded there in January and February, and, strange to say, in *July*. I have often wondered if there may not be a small resident colony of these birds in that area that has escaped detection because of the ani's superficial resemblance to the overwhelmingly abundant Boat-tailed Grackle.

FIG. 96. Heads of anis: Smooth-billed Ani (left); Groove-billed Ani (right).

GROOVE-BILLED ANI. *CROTOPHAGA SULCIROSTRIS.* Fig. 96

The Groove-billed Ani is an uncommon but fairly regular winter resident in Louisiana that has been recorded on dates from October 7 to April 23. Except for a single record at Cottonport, on December 11, 1932, and another near New Roads, on December 12, 1954, it has been seen only in the coastal parishes of the state. At such places as City Park in New Orleans and at Grand Isle it has been encountered on fairly numerous occasions. Why it should occur in the state at all is a mystery, since Louisiana is far removed from its

usual haunts. It is typically a bird of the tropics and normally ranges north only to the lower Rio Grande Valley. Hence, for the species to reach southern Louisiana in fall, it must travel many hundreds of miles northeastward when other migratory birds in North America are moving southward.

The Groove-billed Ani frequents orchards and sometimes associates with cows in pastures. It is a noisy, querulous bird with a wide assortment of unmusical sounds. As the name implies, its bill is furrowed longitudinally, while the otherwise similar Smooth-billed Ani has a smooth bill.

OWLS

Order *Strigiformes*

ALTHOUGH THE ORDER Strigiformes is divided into two families, the Barn Owls and the Horned Owls, it is a remarkably homogeneous group, clearly differentiated from its closest relatives. Unlike other birds, owls are flat faced; the eyes are not located on the sides of the head with the bill interposed but are instead situated so that both peer straight forward from a flat facial disc. This arrangement is probably of great value to the owl, which must necessarily have an extraordinary sense of sight in order to be able to see at night. The lens of the eye is capable of considerable forward and backward adjustment, a fact that doubtless permits rapid focusing, especially useful at night when the owl drops down swiftly and unerringly on its unsuspecting prey. The feathers, including even the large flight feathers, are extremely soft and flexible. This permits owls to fly without making the usual "swooshing" sound normally associated with bird flight, and hence they are able to descend on a rat without disclosing their advance.

Owls are generally very early nesters, sometimes in the South having young as early as January. This is a rather remarkable adaptation, for the birds gain a great advantage by bringing forth their young as close as possible to the annual peak of the small rodent population. Baby owls are voracious eaters. I once watched a pair of Barn Owls, which had a nest in a hollow tree on the campus of Louisiana Polytechnic Institute at Ruston, bring in five field mice in as many trips and shove each mouse into the mouth of *one* nestling. When the sixth mouse was brought to the nest and given to the same favored offspring, this hapless individual could swallow no more. For over an hour the

tail of the last mouse hung from the corner of the little owl's mouth as if the latter were waiting to digest some of the initial mice and thereby make room for the others in its alimentary tract.

Our native woods mice, field mice, and rats provide an abundant source of winter food for our owl and hawk populations. Indeed, were it not for the service rendered to us by these birds of prey, the rat and mouse population of our state would doubtless increase to disastrous proportions. When a mouse is eaten by an owl, the hair and most of the bones are rolled into a pellet by the muscles of the owl's stomach and regurgitated onto the ground near the bird's roost or nest. Since the skull of each kind of mammal has striking individual peculiarities, a specialist can study the contents of an owl pellet and determine not only how many animals the owl has eaten but also exactly what species it has caught. For example, Dr. A. K. Fisher, who in his lifetime was one of the leading authorities on the food habits of North American birds, once studied the nesting site of a pair of Barn Owls in one of the towers of the Smithsonian Institution building in Washington and later wrote: "The floor was strewn with pellets, and the nest, which was in one corner, was composed of a mass of broken-down ones. An examination of 200 of these pellets gave a total of 454 skulls. Of these, 225 were meadow mice; 2, pine mice; 179, house mice; 20, rats; 6, jumping mice; 20, shrews; 1, a star-nosed mole; and 1, a Vesper Sparrow."

The Barn Owl Family: *Tytonidae*

Barn Owls are so different structurally from other owls that they are placed in a family of their own. There are, however, only ten species in the entire family, even though it is virtually world-wide in its distribution. The single species, *Tyto alba*, to which our Louisiana bird belongs, occurs also in such distant lands as Tierra del Fuego, the Fiji Islands, Australia, Madagascar, India, Palestine, Africa, Russia, Norway, England, and most of the countries

and islands in-between. I know of no other bird with a more cosmopolitan distribution. Of course, the Barn Owl is by no means uniform in color or in size throughout its wide range, but most of the geographical variants are not different enough to be accorded recognition as species.

BARN OWL. *Tyto alba.* Pl. XX; p. 329

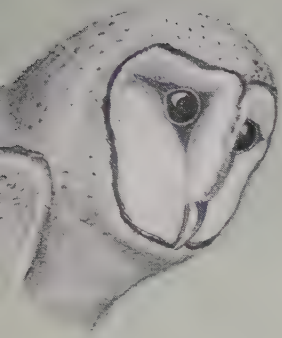
The Barn Owl, or "monkey-faced owl" as it is often called, occurs in two phases, a yellow- or buffy-breasted phase and one in which white predominates below. The latter color variation has often been the basis for erroneous local reports of the Snowy Owl, a giant-sized, white owl of the Arctic regions that sometimes spreads southward in winter over parts of the United States. The best distinguishing features of the Barn Owl are its heart-shaped facial disc, its extraordinarily long legs, and its hissing call note that sounds like escaping steam.

It is a common permanent resident that frequently nests in barns, attics, and church steeples, sometimes in hollow trees, and rarely in holes in the ground. The eggs are three to five in number and are white in color, like the eggs of most species that nest in the dark. The laying habits of the Barn Owl are unlike those of most birds, which generally do not commence incubation until all eggs in a clutch are laid. The latter practice insures that all eggs will hatch more or less simultaneously. If this were not true, birds such as the Bobwhite that lay large clutches, would have young hatching and leaving the nest over a two-week period and the problems of parental care would be terrifically compounded. Barn Owls, however, begin to incubate as soon as the first egg is laid, and for this reason their young sometimes vary immensely in size.

Explanation of *Plate XX*

Heads of Owls

1. Barn Owl (p. 318). **2.** Barred Owl (p. 322). **3.** Great Horned Owl (p. 320). **4.** Screech Owl (p. 319). **5.** Short-eared Owl (p. 323). **6.** Burrowing Owl (p. 321).



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The Typical Owl Family:

Strigidae

This family is represented on the Louisiana list by nine species, almost as many kinds as there are species of Tytonidae in the entire world; but only three of these nine species are definitely known to nest within our borders.

SCREECH OWL. *Otus asio.* Pl. XX; p. 58

This little owl often comes to live in a hollow tree or in a dense thicket of shrubbery close to human habitations. Generally speaking its presence is not looked upon with favor, for its tremulous, shivering note is superstitiously thought by many to be an omen of ill luck or even of an approaching death. Of course, it is very easy to forestall such catastrophes, provided one is aware of the correct techniques. One method is to turn one's socks wrong side out; another, to turn one's hat around. As a matter of fact, however, the Screech Owl should be welcomed by man to his premises, for it is a far better "mouser" than any pussycat that ever lived. Moreover, many people, including myself, enjoy hearing the quavering notes that these little birds make as their contribution to the interesting chorus of voices that emanates from the darkness at night.

The Screech Owl has so-called "ear" tufts, which are characteristic of many kinds of owls, but here it is the only common small owl possessing them. A red and a gray color phase may sometimes occur in the same brood (see color photograph opposite page 58), but Screech Owls in Louisiana are generally somewhat brownish and thus intermediate between these two color extremes. Four to six white eggs are laid in a hollow in a tree in March or early April. The species is common throughout the wooded sections of the state, including the cheniers along the coast.

FLAMMULATED OWL. *Otus flammeolus.* Pl. XXI

This little owl really has no business in Louisiana, for it is supposed to be a denizen of our western mountains from British Columbia southward through the United States to the highlands of Mexico. On January 2, 1949, however, one was captured in a willow thicket on the banks of the Mississippi River, a few miles below Baton Rouge, and is now preserved in the Louisiana State University Museum of Zoology. The unusual severity of the winter of 1948-1949 through the northwestern states may have been the factor responsible for the unexpected appearance of this individual far from its normal range.

The Flammulated Owl closely resembles the Screech Owl, but it is only slightly more than half as large; has brown, instead of yellow, eyes; and has more finely vermiculated feathers. Its call is a soft, single-syllabled *hoot* that is repeated at regular intervals.

GREAT HORNED OWL. *Bubo virginianus.* Pl. XX

The Great Horned Owl has often been referred to as the "tiger" of the bird world because of the ferocious manner in which it preys on many kinds of small mammals and birds. Its large size enables it to kill rabbits with ease and to subdue skunks, which it apparently relishes. Although it kills poultry, it also eats great quantities of rats and mice. The species is easily distinguished by its large size (over twenty inches in length), by its prominent "ear" tufts, and by its deep, sonorous, monosyllabic call note that is usually repeated three or four times, *whoo, whoo-whoo, whoo*, suggesting the barking of a deep-throated hound-dog off in the distance. The call of the Barred Owl, or "hoot owl" is a laughing, higher-pitched, six- to eight-noted call with various inflections toward the end.

In December or January the Great Horned Owl lays its two or three eggs in old abandoned crow's or squirrel's nest, in hollows in trees, or even sometimes on the ledges of city buildings. It is a widespread permanent resident that is never as plentiful as the Barred Owl.

SNOWY OWL. *Nyctea scandiaca.* Pl. XXI

This huge white owl, which averages larger than even the Great Horned Owl, is an Arctic species that about once every four winters invades the northern part of the United States in considerable numbers. Only rarely, however, have its wanderings extended into the South. There are but three records for

Louisiana, all prior to 1900, and the bird is especially scarce in Georgia, Alabama, Mississippi, and Arkansas.

The Snowy Owl has a large, round head without "ear" tufts, and its predominantly white plumage is more or less barred with dusky. The legs and feet are heavily feathered, and the eyes are yellow. No other owl is as white as the Snowy Owl. In its white phase the Barn Owl is white only on the under parts and is, of course, also easily told by its smaller size, its disc-shaped face and black eyes, and its disproportionately long legs.

BURROWING OWL. *Speotyto cunicularia.* Pl. XX

The Burrowing Owl in the United States has a peculiar, discontinuous distribution. It is common in the western plains and again on the Kissimmee Prairie in faraway Florida. In Louisiana it occurs as an uncommon winter resident from the first part of October until near the end of March, and, although recorded from many localities throughout the state, it is most frequently observed in the coastal parishes. The alleged discovery of the eggs of this species at Baton Rouge on April 10, 1935, is now considered a doubtful record.

This interesting little owl is easily distinguished by its light brown color, its small Screech Owl size, and its extremely long legs. It sits on the ground or on a fence post and appears to be particularly fond of perches around piles of driftwood and debris on the Gulf beaches. It is often seen in daytime. This owl never seems to emit a sound while it is here in winter, but on its breeding grounds it has a hooting note with some of the quality of the song of the Mourning Dove.

[HAWK OWL. *Surnia ulula.*]

Despite the fact that this species has been listed in previous publications on the birds of Louisiana, there is, in my opinion, no satisfactory record of its occurrence in the state. A specimen is said to have been collected near St. Francisville in the winter of 1886, but since it was not preserved, there is no means now of verifying the identification. Actually the Hawk Owl is a bird of the far north that rarely gets into the United States at all even along the Canadian border. It feeds almost entirely in the daytime and perches on the topmost branch of a tree in a horizontal position (owls generally sit upright). Its medium size, grayish color, and the black "sideburn" patches on the head are diagnostic.

BARRED OWL. *Strix varia.* Pl. XX

In Louisiana this is by far the commonest and best-known member of the owl family, for there is hardly any sizable wood in the state that does not support at least a pair of "hoot owls." Their comical calls can be expressed in southern lingo as "Who cooks for me? Who cooks for you? Who cooks for you-all-l-l-l?" Unlike the Horned Owl, which has a deep three- or four-syllabled call, the Barred Owl generally emits eight or more hoots. Occasionally the hoots are followed by a long drawn-out, weird scream that is enough to chill the bones of the uninitiated. I have heard this note frequently in the vicinity of Monroe but only rarely as far south as Baton Rouge. The Barred Owl lays its two to four eggs in a hollow in a tree, usually not later than February, and sometimes much earlier.

The general color of the present species is dark brown with numerous bars on the upper breast and vertical streaks on the belly. It has no "ear" tufts, and its eyes are so dark that they actually appear to be black. It and the Barn Owl are the only large owls in Louisiana that do not have yellow eyes.

The diet is made up largely of rats and mice and only in rare circumstances includes poultry. Under no conditions, however, should any owl besides the Great Horned be shot, and even the latter should be killed only in cases where actual predation on poultry has been established.

LONG-EARED OWL. *Asio otus.* Pl. XXI

There are comparatively few satisfactory records of this wide-ranging, nocturnal owl in Louisiana, but I suspect that it is present here in at least small numbers each winter. Its habit of perching during the day in a "frozen" position close to the trunk of a tree, especially in dense evergreens, makes it difficult to detect. In some sections it is called the "graveyard owl" because of its fondness for the quietness of the cedars and other evergreens that characterize such places.

In general appearance the Long-eared Owl suggests a Great Horned Owl but is not much more than half the size of the latter and is longitudinally streaked instead of horizontally barred below. Moreover, the exceptionally long "ear" tufts are situated closer together, near the center of the head. It is about the size of a Short-eared Owl, but that species is predominantly buffy in color, instead of dusky and gray with only a smattering of buffy. The few records of the Long-eared Owl in the state are in the period from December 22 to February 26.

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Explanation of *Plate XXI*

Heads of Owls

1. Snowy Owl (p. 320). **2.** Saw-whet Owl (p. 323). **3.** Flammulated Owl (p. 320). **4.** Long-eared Owl (p. 322).

SHORT-EARED OWL. *Asio flammeus.* Pl. XX

The Short-eared Owl is another northern owl that comes to us only in winter. It is, however, apparently much more numerous than the other winter-visiting members of the family, despite the fact that it has gone unrecorded in some years. It often feeds in the daytime or at dusk and, therefore, in areas where it is present, it is frequently observed. Since it seems to prefer open marshy situations, it is more common in the southern parishes than elsewhere in the state. I have also found it, however, in the stubbles of sugar-cane fields following the fall harvest.

The Short-eared Owl is buffy with two prominent black spots near the bend of the wing on the under side, and its "ears" are so diminutive that they are scarcely ever visible. It is seen almost always coursing erratically back and forth like a Marsh Hawk over open spaces in daylight, and, since our other owls virtually never appear in such circumstances, the Short-eared Owl can hardly be confused with them. Its food includes an occasional small marsh bird, but most often it eats only small rodents and insects. Fall migrants usually do not appear in Louisiana until after the first of November and departure in spring takes place in April or early May.

SAW-WHET OWL. *Aegolius acadicus.* Pl. XXI

This little owl is smaller than a Screech Owl and it has no "ear" tufts, a combination of characters that sets it apart from everything else except the Flammulated Owl, which has only inconspicuous "ears" and dark, instead of yellow, eyes. There is but one record of its occurrence in Louisiana, that of a specimen shot near Madisonville in the winter of 1889 and identified by Professor Beyer, who, in his lifetime, was one of Louisiana's most distinguished ornithologists.

The Saw-whet Owl is probably a less infrequent winter visitor to Louisiana than the one record would indicate, for it may simply escape detection because of its retiring habits in daytime. We know that the species reached our latitude in 1951, for a specimen was picked up on December 22 near Dayton, Texas, on the highway between Beaumont and Houston, about fifty miles from the Louisiana line. The call note is a monotonous whistle, *too, too, too, too, too, too,* that is repeated almost endlessly.

GOATSUCKERLIKE BIRDS

Order *Caprimulgiformes*

The Goatsucker Family: *Caprimulgidae*

This strange group of birds called goatsuckers acquired its equally strange name long ago in rural Europe. There, as elsewhere, these birds habitually feed on the wing, low over pastures, at dusk. Some of the simple and superstituous folk of olden times evidently believed that these deft fliers were pilfering milk when they swept in and out among the legs of the goats in quest of winged insects. At any rate, whatever may have been the basis for the name, it is now firmly implanted in our modern ornithological nomenclature.

The goatsuckers are a large group of birds of many bizarre species with equally bizarre names—Frogmouth, Potoo, Whip-poor-will, Chuck-will's-widow, Poor-will, Nighthawk, and others. They all have long wings and long tails, but the striking part of their anatomy is the immense mouth with its tiny, virtually useless bill. On each side of this huge mouth are bristles, often long and stiff, that close up the edges of the gap and thus prevent their insect prey from escaping (fig. 97). Since nearly all activity is on the wing, the minute and extremely weak feet are used only in perching. The exceptionally large eyes are an adaptation to twilight and night feeding. Indeed, it would appear that nature could not have produced a bird more efficiently constructed for pursuit of its food on the wing at a time when nearly all other birds are at roost and fast asleep. During the day, goatsuckers generally perch on a fence post, on the ground, or lengthwise on the limb of a tree. Their colors so nearly match their surroundings that they almost always escape detection. The Mexican Potoo even goes so far as to assume awkward postures that conform with the curvature of the particular dead limb on which it is passing the daylight hours.

I think the most remarkable fact of all about goatsuckers is the recent discovery that at least one species hibernates. Zoologists long made issue of

the fact that no bird was known to be able to go into a complete state of torpidity in order to survive the cold winter months. Most cold-blooded animals—such as frogs, toads, and various reptiles—as well as several mammals, have this remarkable physiological adaptation. Birds that cannot endure cold weather compensate by performing migrations to regions of warmer climate. But in December, 1946, much to the surprise of zoologists, an ornithologist in California discovered a small goatsucker called the Poor-will hibernating in a rocky crevice in a canyon. He took this bird out of its retreat, handled it leisurely, and then replaced it in its nook, all without arousing it from its torpid slumber. The following winter, a Poor-will thought to be the same bird was in the same crypt and was again lethargic. The ornithologist banded this individual bird and commenced a series of weekly visits to its place of hiding, making recordings of the bird's internal temperature and the temperature of the surrounding air, as well as numerous other observations, including ones pertaining to heart beat, respiration, and the effects of various stimuli. Its rectal temperature over a period of seven weeks in midwinter was not only far below normal and almost constant at 66°F (normal bird temperature is about 107°F), but was also below the temperature of the surrounding atmosphere near noonday. The bird stayed in a state of coma in its protecting nook throughout the second winter, at least until some time between February 14 and 22; on the latter date it flew from the hand when picked up. As if all this were not enough to startle zoologists, the same bird, as its aluminum band proved, came back to the identical spot the following winter! The hibernating bird was further studied between November 24 and December 5, but on December 19, 1948, and on dates thereafter the hiding niche was empty and the bird was not to be found.

FIG. 97. Head of Chuck-will's-widow, showing rictal bristles that fence the corners of the mouth when it is open.

CHUCK-WILL'S-WIDOW. *CAPRIMULGUS CAROLINENSIS.* Figs. 97, 98

The Chuck-will's-widow is the common breeding goatsucker of the wooded upland regions of Louisiana, particularly numerous where there is a mixture of pines and oaks. It is the largest member of the family in the United States and is reddish brown all over, sprinkled with black. The other species in Louisiana have patches of white or pale buff either in the wings or the tail or both.

Throughout the state the Chuck-will's-widow is confused with the Whip-poor-will, which is a transient species occurring only in spring and fall. The call of the latter is a *whip'-poor-will'*, the accent being on the first and last syllables. The call of the present species is a rapidly repeated *chuck-will's-wid'ow*, the emphasis being on the "will's" and first syllable of the "widow." As a matter of fact, unless one is quite close to the singing bird, the "chuck" is inaudible, and all one hears is an often-repeated *-will's-wid'ow, -will's-wid'ow.*

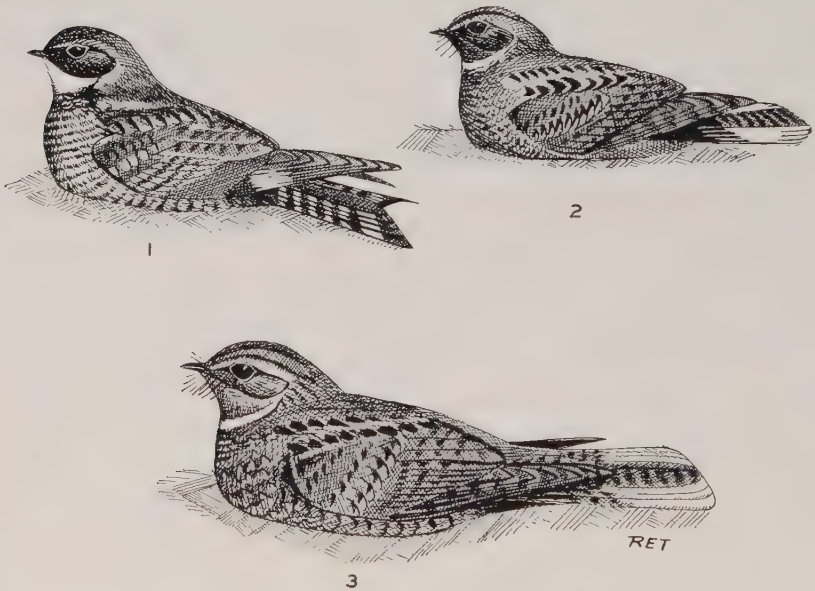

FIG. 98. The three common goatsuckers of Louisiana: (1) Common Nighthawk; (2) Whip-poor-will; (3) Chuck-will's-widow.

There are few sounds that are to me more pleasant than the continuous nocturnal calling, back and forth, of several of these interesting birds. In spring and early summer, especially on moonlit nights, the woods reverberate with their calls, and although often heard, the bird is seldom seen unless one happens, in walking through the woods, to flush one from the ground.

Migrant Chuck-will's-widows usually arrive in numbers in the first part of April, and from then to the end of summer they are common. After they cease to call it is difficult to get an estimate of their numbers, but it is safe to presume that most of them are gone by the middle of October. On our wooded coastal islands and cheniers an occasional Chuck-will's-widow remains throughout the cold months, but it is only by sheer luck that we ever find one of these silent, wintering individuals.

The food of the species consists almost entirely of insects. But there has been at least one instance of an individual engulfing a hummingbird in its two-inch gape and another of a Chuck-will's-widow swallowing a sparrow.

WHIP-POOR-WILL. *Caprimulgus vociferus.* Fig. 98

This species is an elusive spring and fall transient and a rare winter resident in Louisiana. It has been accredited with nesting in northern Louisiana, particularly in the vicinity of Shreveport, and it apparently once did so in limited numbers. Why it should have discontinued occupying this region in summer is unexplainable, but there is no evidence that it breeds there now.

During its passage in spring, which takes place mainly in late March and the first three weeks of April, the Whip-poor-will is sometimes heard calling, although rarely is it seen, since, like the preceding species, it is active only in the twilight and at night. Indeed, during the period of its southward return when it is voiceless, we have only two state records.

The Whip-poor-will is considerably smaller than the Chuck-will's-widow; the male has dirty white terminal spots on the outer tail feathers, and its call notes are different (see preceding account).

COMMON NIGHTHAWK. *Chordeiles minor.* Figs. 98, 99

The nighthawks are not hawks and are considerably less nocturnal than their relatives, the Whip-poor-will and the Chuck-will's-widow. Yet the local name "bull-bat," by which this species is generally known in Louisiana, is no

more appropriate than the name nighthawk, since nighthawks have no proper association, real or fanciful, with either bulls or bats—unless the booming sound made by their wings is considered suggestive of the bellow of a bull. On Grand Isle I have heard the Common Nighthawk called the *pee-ank zoom*, a vivid name that combines its call with an allusion to one of its interesting habits. The bird flies overhead emitting an eruptive *pee-ank* sound and then suddenly dives earthward at considerable speed. Just before crashing to the ground or on a roof top, it swoops upward and the rushing of the air through its flight feathers causes the latter to vibrate and to produce the booming *zoom.* This interesting performance is repeated over and over again by the males and is doubtless done for the benefit of a female perched on some nearby limb.

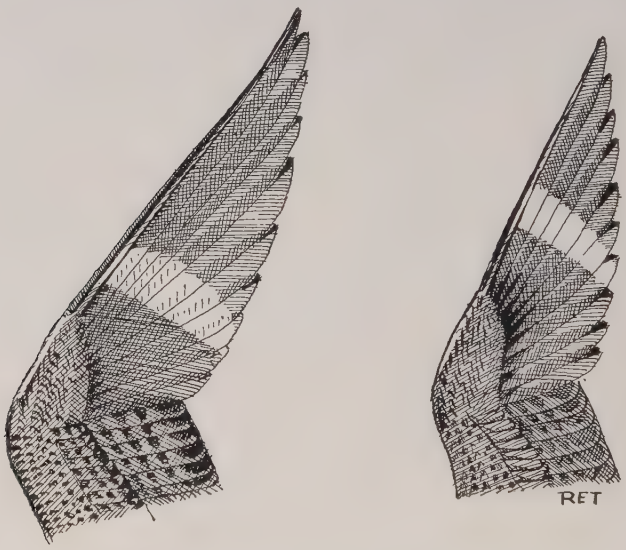

Fig. 99. Wings of the Common Nighthawk (left) and of the Lesser Nighthawk (right). In the latter, the white patch is closer to the end of the wing than it is in the Common Nighthawk.

Nighthawks cannot be acclaimed as nest builders, for the two eggs are merely placed in a slight depression in the ground in a clearing in the woods, in the rough of a golf course, or in similar situations. Not infrequently they lay their eggs on the flat graveled roof tops of downtown office buildings.

The chief field marks of the Common Nighthawk, besides its distinctive call notes, are its long, pointed wings, its erratic, zigzag flight, and the presence

Barn Owl in Loft

SAMUEL A. GRIMES

Female Ruby-throat at Lichen-covered Nest ALLAN D. CRUICKSHANK

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She Pauses in Midair Beneath a Bottlebrush Flower SAMUEL A. GRIMES

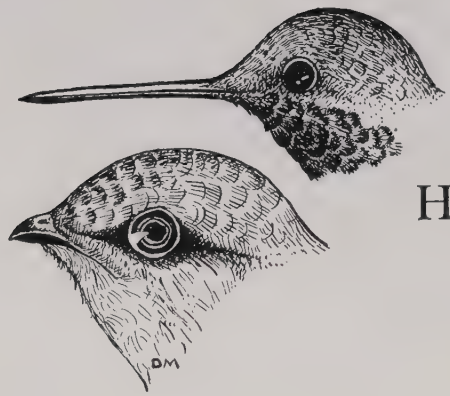
of a white patch in the wing. Like its relatives, it feeds almost entirely on flying insects, dragonflies being preferred.

The species is migratory to faraway South America, leaving Louisiana by late October and generally not returning until near the middle of April. After this time it is abundant and widespread throughout the southern part of the state. For some reason it is rather uncommon in the extreme northern sections of Louisiana. The Lesser or "Texas" Nighthawk, a species very similar in appearance, has been recorded in southwestern Louisiana (see next account for its distinguishing characteristics).

LESSER NIGHTHAWK. *CHORDEILES ACUTIPENNIS.* Fig. 99

This western relative of the Common Nighthawk has been detected in our state on only one occasion. This was on April 10, 1942, when a group of students and I collected two specimens from a small flock found feeding at dusk over the edge of a marsh six miles east of Cameron, in southwestern Louisiana. The following morning one was found roosting on the limb of a tree in a nearby chenier.

The species, which has also been called the "Texas Nighthawk," breeds in Texas and winters from central Mexico to South America. Its migrations in spring may quite often bring it into southwestern Louisiana, where it simply passes undetected because of its great similarity to the Common Nighthawk. In addition to being slightly smaller, a feature that would hardly be noticed in the field, the present species has the white patch in the wing relatively much closer to the tip. In the Lesser Nighthawk the white patch is centered on a point two-thirds the distance from the bend of the wing to the tip, while in the Common Nighthawk it is only a little more than halfway from the bend to the tip (fig. 99). The call note of the Lesser Nighthawk is a hooting or grunting sound, totally unlike the *pee-ank* of the Common Nighthawk.



SWIFTS AND HUMMINGBIRDS

Order *Apodiformes*

It will doubtless seem strange, to one who is not an ornithologist, that swifts and hummingbirds are considered closely related. Swifts, on the one hand, have bills that are minute and not often used, for they get their food by engulfing insects in the opened mouth as they fly through the air. Hummingbirds, on the other hand, have long bills and tongues highly modified for probing into the corollas of flowers and lapping up the nectar (fig. 107). This seemingly important difference in bill and tongue structure is, however, merely an adaptation to certain specialized feeding habits, for in other anatomical characteristics swifts and hummingbirds have a great deal in common. Their feet, for instance, are small and weak—the ordinal name Apodiformes means literally, and of course incorrectly, "forms without feet." Other characteristics they have in common are: the wings are relatively long and narrow, hence knifelike; the legs are without the ambiens muscle, which, when present, is used in flexing the toes; the sternum, or breastbone, is wide, deeply keeled, and unnotched. The colon is without caeca, or pouches; the number of wing and tail feathers and the arrangement of the feather tracts are very similar; and the oil gland at the base of the tail is without a tuft of feathers, which is so often present in other groups. These and other internal features possessed by both hummingbirds and swifts point to a close relationship not readily apparent in the birds' external appearances.

The Swift Family:

Apodidae

Swifts are small, long-winged birds that feed entirely on the wing. Since they are insectivorous, all but a comparatively few of the 82 species in the world are confined to tropical regions. Two of the four kinds that occur in the United States also enter Louisiana, but only one breeds here. Both of our species are members of a group that is unique within the family in having the shafts of the tail feathers longer than the webs (fig. 100), an adaptation for clinging vertically to the sides of caves, the interiors of hollow trees, and the insides of chimneys. Swifts are popularly confused with swallows, possibly because of a superficial similarity in feeding habits, but they are not closely related to swallows. Swifts use a secretion of their salivary glands to hold together their fragile nests, and one Asiatic and Philippine group, the Edible Nest Swiftlets, builds nests entirely of this substance, which is gathered by man and eaten as a delicacy.

CHIMNEY SWIFT. *Chaetura pelagica.* Fig. 102

The Chimney Swift, or "chimney sweep" as it is sometimes called, is one of our commonest summer residents from the last week of March until near the end of October. It is indeed one of the best-known birds of the eastern

United States. In the broad area extending eastward to the Atlantic Ocean from a line between Texas and Manitoba, there are probably very few towns uninhabited in summer by swifts. But, despite this widespread abundance, it was not until 1944 that this bird's winter home was discovered, and then it was discovered only in part. Aluminum bands that had been placed on 13 swifts in Tennessee, Alabama, Georgia, Illinois, Connecticut, and Ontario were obtained by a missionary from natives living along the Río Yanayaco, one of the headwaters of the Amazon in eastern Peru. How the natives came by the bands was never ascertained, but it can be presumed that they must have examined no less than 5,000 swifts in order to have found 13 wearing bands. This presumption is based on the experience of bird banders who have handled large numbers of swifts and have found that, on the average, for every 400 birds caught, one will be banded.

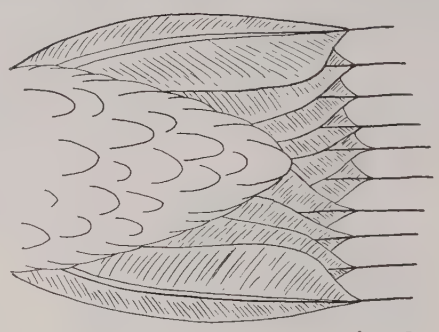


FIG. 100. Tail of Chimney Swift. Note the extension of the rhachis beyond the tip of the web, forming a stiff terminal spine on each tail feather. The tail is used by the swift as a prop as it clings to the interior of a hollow tree or chimney.

The dispersal of 21,414 swifts that were captured by a special trap (fig. 101) and banded at Baton Rouge between 1937 and 1939, inclusive, and the recovery of "foreign" banded birds (that is, birds banded at other stations) at the same place is shown by the accompanying map (fig. 103). One of the birds banded at Baton Rouge on September 24, 1938, presumably went to South America to spend the winter. It must have come back through the United States in 1939, for it was captured and released at Campbellton, New Brunswick, on June 11, 1939. It then presumably went back to South America

FIG. 101. Photograph of Chimney Swift trap in position. Sections of 7-inch stove pipe connect the L-shaped box on top of the chimney with the receiving cage on ground level. The trap is placed on the chimney after the swifts go to roost. At daybreak on the following morning light begins to enter the trap through the screen wire top and through the plexiglass window on the front side of the box. As the birds fly toward the light in attempting to leave the chimney, they are deflected by the screen and the plexiglass window into the galvanized metal funnel and thence through the stove pipe tunnel to the receiving cage. Several thousand swifts can be banded in a single morning by the use of this apparatus.

in the fall, possibly passing through Baton Rouge as it did in 1938. Finally, on August 22, 1940, it was found dead at Upsalquitch, New Brunswick, fifteen miles from the point of its capture and release in 1939. Case histories such as this serve to illustrate the great importance of bird banding as a means of learning about the movements of wild birds.

The Chimney Swift is very punctual in its migratory movements. In spring it arrives almost simultaneously throughout the state in the third week of March. In fall it congregates in vast flocks during October in the cities and larger towns in the southern part of the state. At Baton Rouge as many as 7,000 swifts have roosted in one night in a single large chimney. Such huge gatherings are noted in the late afternoon as the birds circle about a chimney chosen for a roost. Suddenly, on an evening when the temperature has dropped abruptly, the large flocks disappear en masse and no Chimney Swifts are seen again until the following March.

The cigar-shaped body, long narrow wings, and brownish-black coloration make this species easily identifiable. The color of the throat is actually white but is usually more or less obscured by chimney soot (the rare Vaux Swift has nearly the entire under parts whitish). The song or call note is a loud twitter that is repeated almost continuously as the birds wheel about overhead. In feeding, swifts spend hours upon hours on the wing, and they even get their nesting materials of sticks by flying through trees and snipping off small twigs.

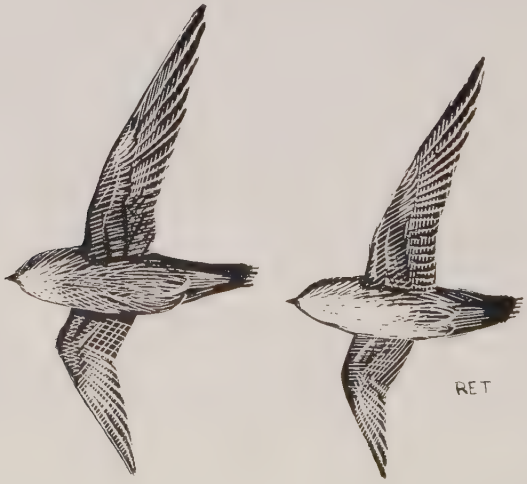


Fig. 102. Chimney Swift (left) and Vaux Swift (right).

FIG. 103. Map showing points of recovery (open circles) of 126 of 21,414 swifts banded at Baton Rouge and the sources (black dots) of 64 "foreign" birds recovered at Baton Rouge, 1937-1939. (Reprinted from Lowery, *Proc. Louisiana Acad. Sci.*, 7, 1943:64.)

These they carry to a chimney (or, rarely, to a hollow tree, as in the days before the advent of man) where they make a fragile shelf of sticks, cemented together by their own saliva, to cradle the three or four white eggs.

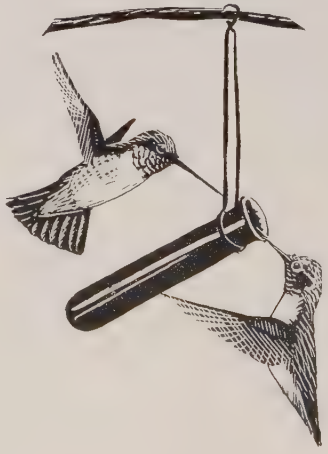
VAUX SWIFT. *CHAETURA VAUXI.* Fig. 102

This species of the Pacific Coast states is a very rare but fairly regular winter visitor in southeastern Louisiana. It has arrived as early as October 14 (when a single individual was found in a roosting flock of 3,300 Chimney Swifts that had been trapped for banding) and has remained as late as March 3.

The Vaux Swift cannot always be distinguished in the field from the Chimney Swift, although it is slightly smaller and its twittering call note is decidedly weaker. Also, unlike the Chimney Swift, which has a white throat and a blackish-brown breast and belly, this species is entirely light colored below (fig. 102). The uniformly light under parts of the Vaux Swift stand out rather prominently when the bird circles overhead, provided, of course, the individual in question is not soiled from roosting in a sooty chimney. Any swift seen in Louisiana after the first week of November and before the middle of the second week of March is almost certainly of this species, since there is no evidence that the Chimney Swift is ever present anywhere in the United States in this period.

THE HUMMINGBIRD FAMILY:

Trochilidae



HUMMINGBIRDS OCCUR only in the Western Hemisphere, their main headquarters being in the mountainous areas of the northwestern part of South

America. No less than 115 species occur in diminutive Ecuador alone. Central America and southern Mexico likewise have a wide variety of species, but as one progresses northward into northern Mexico and into the United States, representation of the family rapidly diminishes. Including the forms that barely get across our southern border, there are in this country but 14 species. Of these, only the Ruby-throated Hummingbird breeds east of the Great Plains; the remaining species occur mainly in the southwestern states and in the Pacific Coast region.

One aid to correct species identification of male hummingbirds is the color of the feathers of the throat, or gorget as it is called. These particular feathers are nearly always highly iridescent. Their remarkable sheen results from their peculiar physical structure and not from the presence or absence of pigments. The brilliant color appears only when light, striking the gorget at a certain angle, is broken up by the microscopic structures that go to make up the feathers. Since the minute details of structure of the feathers of the gorget in each species often vary somewhat, a wide variety of colors and shades of colors results. In some hummers the gorget is a flaming red, while in others it may be a rose-red, or even blue, purple, or green, depending on the species.

RUBY-THROATED HUMMINGBIRD. Figs. 104, 105; p. 330

Archilochus colubris.

The Ruby-throat arrives in Louisiana in early March and remains until late October. There are few authenticated records of its occurrence here in winter, one being that of an individual that remained until late January, 1952, in the garden of Mrs. W. W. Tennant at Baton Rouge. Hummers that otherwise have been found after the first week of December and that have been positively identified as to species have in nearly all cases proved to be the Rufous, or, in one instance, the Broad-tailed Hummingbird—both distinctly western species. The male Ruby-throat is easily distinguished from other hummers by its ruby-colored throat and its solid green back and tail. The female lacks the gorget, is uniformly grayish white below, is emerald-green above, and has the outer tail feathers tipped with white.

Ruby-throated Hummingbirds are found in numbers in the summer throughout northern Louisiana but they are not quite as common in the southern parishes. They build elaborate nests of finely woven hair and plant down, bedecked on the outside in the most delicate fashion with lichens and moss, held in place by cobwebs. These amazing structures are about the size of an

eyewashing cup and are placed on a horizontal branch where they can hardly be detected unless the bird is seen to come to the nest or to depart from it. The two eggs are white and no larger in diameter than a lead pencil.

Fig. 104. Male Ruby-throated Hummingbird.

BROAD-TAILED HUMMINGBIRD. *Selasphorus platycercus.* Fig. 105

There is only one record of the occurrence of this far-western species in Louisiana. During December, 1952, and until January 9, 1953, Mrs. W. W. Tennant of Baton Rouge had one under daily observation in her garden, where it was studied in the most minute detail by a half-dozen or more ornithologists. It fed mainly on the flowers of her salvia beds, but, in addition, also visited special hummingbird feeders that she keeps filled with honey-sweetened water. Sometimes it would hover within three feet or less of the eyes of an observer standing by one of the feeders. The Broad-tail was often compared at close range with a male Rufous Hummingbird that was present in the same garden, as well as with a large series of museum skins carried to the garden in specimen trays. So ideal were the circumstances for studying the individual that I, for one, have no doubt at all regarding its identity. The little bird was

studied as close as it could have been in the hand in the museum, the only difficulty being that no measurements of its wing, tail, and bill could be made. But the shape of the tail feathers, which are diagnostic, was clearly noted.

The male of the Broad-tail is slightly larger than the common Ruby-throat, which it resembles somewhat in color, but its gorget is a purplish red instead of fiery, geranium red. Females and immature males have the flanks strongly washed with buffy and the basal half of the outer tail feathers reddish brown, followed by a broad band of black and finally a white tip. The Ruby-throat is never buffy on the flanks nor does it ever have brown on the basal portions of the outer tail feathers. The females and immatures of the Broad-tail, because of their green backs and green rectrices, resemble immature Rufous Hummingbirds, which also have a greenish back; but the latter have enough reddish brown in all but the two central tail feathers to give the spread tail a predominantly brownish appearance. In the Broad-tail, the brown on the lateral rectrices is very difficult, sometimes impossible, to see in the field. Any of these species in the hand are immediately distinguishable by the shapes of the primaries and rectrices (fig. 105).

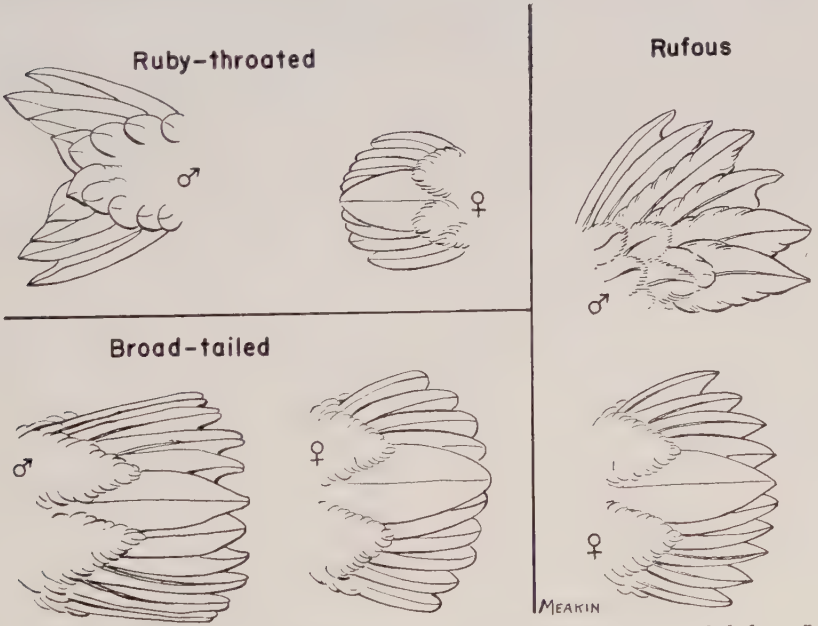


FIG. 105. Tail feathers of the three species of hummingbirds recorded from Louisiana. The symbol ♂ denotes male, ♀ female.

RUFOUS HUMMINGBIRD. *Selasphorus rufus.* Fig. 105

This Rocky Mountain species is a rare but fairly regular winter visitor in southeastern Louisiana. Although it possibly arrives in late October or even earlier, there are actually no definite records of its presence in the state until November. Departure in the spring takes place in late March or early April. The flowers of hibiscus and late-blooming salvia are especially attractive to it; indeed, the bird's continued presence in any locality in winter may depend on the continued blooming of one or the other of these plants.

The adult male Rufous is reddish brown above and has a fiery red gorget. The female and immature, unlike the adult male, have the back and central tail feathers bronzy green (although never a distinctly emerald-green as in the two preceding species) and, of course, lack the gorget. They differ further from the females and young of the Ruby-throat in having a wash of buff on the flanks. For a comparison with the Broad-tailed Hummingbird, which has been recorded only once, see the preceding account.

ROLLERLIKE BIRDS

Order *Coraciiformes*

The Kingfisher Family: *Alcedinidae*

BELTED KINGFISHER. *Megaceryle alcyon.* Fig. 106

The Belted Kingfisher is a familiar sight along the numerous waterways of our state. It particularly likes to perch on telephone wires along bayous and drainage canals, where it can look down into the water below and wait for a minnow or some other small fish to come into view. It is one of the very few birds adept at hovering in mid-air, a feat that certainly expedites its capture of food, as well as one that provides an excellent aid in its identification. Kingfishers have bills that show a strong resemblance to those of terns, which have the same general food habits but are only distantly related. Such resemblances may be explained by the principle of adaptive convergence where originally diverse animals living in the same habitat and doing the same things tend to become more and more similar by evolving similar structures under selective pressure.

The best field marks of the kingfisher are its disproportionately large head, its combination of bluish upper parts and white under parts, the broad white collar that almost surrounds the neck, and the one or two wide bands across the upper breast. In the males there is only one bluish-gray band, but in the female there is in addition a rufous band below the gray that not only crosses the breast but also extends along the sides. This additional bright color in the female makes the Belted Kingfisher one of the few species of birds in which the male is less vividly marked than its mate.

Nests are usually built at the end of six-foot horizontal tunnels dug in the sides of banks of streams, and, like the eggs of nearly all other birds that nest in dark cavities, the five to eight eggs are white. The call note is a loud rattle that is often emitted just after a successful plunge for a fish, as the bird rises shaking water from its feathers. With the advent of cold weather, the

arrival of northern Belted Kingfishers causes the species to increase in numbers throughout the state, and it becomes especially abundant in southern Louisiana. Sometimes in January and other winter months scores of these birds are seen perched on the telephone wires along the roadside canals between Leeville and Grand Isle.

Fig. 106. Female Belted Kingfisher.

WOODPECKERLIKE BIRDS

Order *Piciformes*

The Woodpecker Family: *Picidae*

Woodpeckers show remarkable structural adaptations that enable them to fill a special environmental niche—one in which they perform a great service to man. As even every child knows, woodpeckers spend their lives on the trunks and limbs of trees. There they eat millions of wood borers, bark lice, and other insects that, left uncontrolled, would do great damage to the trees of our forests. In order that they may successfully move about on vertical tree trunks or steep limbs, nature has provided them with a special foot structure and a special kind of tail. Instead of having the usual arrangement of three toes in front and one behind, as is the case in most birds, woodpeckers generally have two toes in front and two behind, a condition termed zygodactyl, or yoke-toed (see plate XXII). The two toes that are directed backward, combined with the stiffened tail feathers, which are held against the tree trunks, provide the birds with props.

Other remarkable adaptations of woodpeckers are the evolutionary changes in their skulls and tongues that enable them to drill holes in hard wood and to extract insects from these excavations. The skull bones are exceedingly hard and ossified and therefore can withstand the terrific vibrations and shock that the birds impose on themselves when drumming and drilling. But the most amazing thing about the head is the modification that has taken place in the tongue. This structure, which is part of what is known as the hyoid apparatus, is extremely elastic and is provided terminally with tiny hooks or barbs, like an arrow (fig. 107). By drilling a hole only slightly larger in diameter than its bill, the woodpecker is able to extrude the elastic tongue and literally spear or hook out the insect that it seeks.

All woodpeckers use their chisel-like bills to excavate their nest holes. They all lay pure white eggs, which is true of most cavity-nesting species.

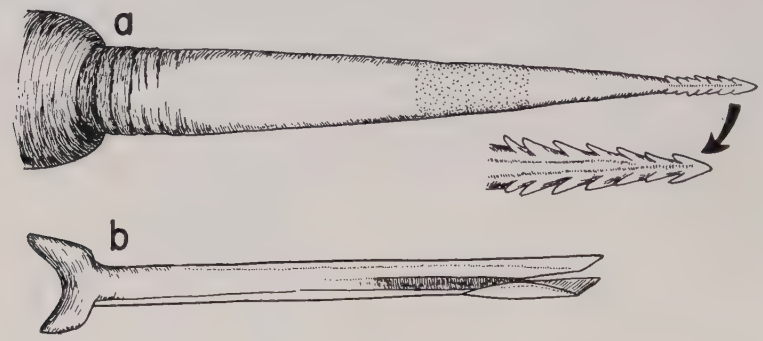


FIG. 107. Tongues (after Lucas) of a woodpecker (a) and a hummingbird (b), showing modifications to suit two different feeding habits. With the barbs on the end of its tongue, the woodpecker is able to rake insects out of the hole that it drills in a tree. The tubelike tongue of the hummingbird enables it to suck nectar from deep within the corolla of a flower.

YELLOW-SHAFTED FLICKER. Pl. XXIII; fig. 108; p. 369

COLAPTES AURATUS.

The "yellow-hammer," as this woodpecker is commonly called, is easily identified by the yellow shafts of its tail and wing feathers, which from certain angles give the bird in flight an over-all yellowish color; by its extensive white rump, which is also conspicuous in flight (we say that "its shirttail hangs out"); by the red crescent on the back of the head and the black crescent on the breast; and by the black "mustache" marks in the male. Its call is a rapidly repeated *wick, wick, wick, wick, wick.* When two birds come together they emit a loud *kee-you* and a *flick-a, flick-a* note that can be mistaken for the call of no other bird.

Flickers are less strictly arboreal than other woodpeckers and are often seen on the ground, where they search for ants, one of their favorite items of food. They are common and widespread permanent residents and are somewhat more numerous in winter than in summer because of the influx of birds from farther north.

RED-SHAFTED FLICKER. *Colaptes cafer.* Fig. 108

This western counterpart of our native "yellow-hammer" is a very rare winter visitor to Louisiana. The only incontrovertible evidence of its occurrence in the state is provided by a single individual seen near Shreveport on several dates from January 4 to 25, 1953, and one at the same place from October 24, 1953, to March 7, 1954. But unsatisfactory glimpses on various other occasions elsewhere of birds appearing to be this species lead to the suspicion that the Red-shafted Flicker is more common than the record indicates, particularly since one seldom takes the time to examine critically all the flickers seen in one day. It differs from the Yellow-shafted Flicker, as the name implies, by having the feather shafts and linings of the wings salmon-red instead of yellow. The "mustache" in the male is also red, instead of black.

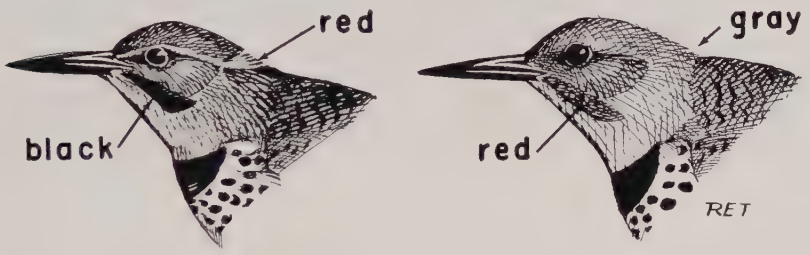


Fig. 108. Heads of the two species of flickers: Yellow-shafted Flicker (left); Red-shafted Flicker (right).

PILEATED WOODPECKER. *Dryocopus pileatus.* Pl. XXII; p. 350

This is the "log-god," "Indian hen," "woodchuck," or "cock-of-the-woods" that is so familiar to hunters, fishermen, and others who roam our woods and paddle our forest-lined streams. Except for the rare and nearly extinct Ivory-billed Woodpecker, it is our largest woodpecker, for it is nearly the size of a crow. At rest on the side of a tree, the Pileated Woodpecker is predominantly black, but in flight it shows a great deal of white in the wings. In the male the top of the head and crest are bright red, while the female has the forehead dusky and only the posterior part of the crest is red. The call note resembles that of a flicker but is louder and more eruptive—*kuk—kuk—kukkuk—kuk-kuk*, sometimes with a rising pitch. Like that of all woodpeckers its flight is generally a bounding series of undulations and is punctuated by its resounding calls.

The species is a fairly common to common permanent resident in the wooded sections of the state, both in hardwoods and in pines, especially where forests of the latter are bisected by hardwood-bordered streams. The nest hole is made by the bird itself in the trunk of a tree or snag, sometimes at a considerable height above the ground. The cavity is often as much as three feet in depth, with an entrance hole that is three or four inches in diameter. The four or five pure white eggs are deposited simply on a layer of shavings in the bottom of the cavity.

RED-BELLIED WOODPECKER. *Centurus carolinus.* Pl. XXIII

Early naturalists were extremely clever in choosing names for birds, but not so in the case of this bird. Unless one has a specimen of the Red-bellied Woodpecker in the hand, there is little likelihood of seeing the color that gives the species its name; for generally the only red on the belly is a slight trace on the extreme lower under parts. It is otherwise white below; the back is barred transversely with black and white; and the top of the head is solid red in the male and partially red in the female. No other woodpecker in Louisiana has a color combination of this sort. This and the Downy Woodpecker are our commonest woodpeckers, for there is hardly a patch of woods in the state where there is not a pair or more of each residing.

The call of the Red-bellied Woodpecker is a rolling *chur-r-r-r-r-r-r-r-r*, and there is also a hoarse note that might be expressed as a *chaw, chaw.* Three to eight, usually four or five, eggs are laid in cavities excavated jointly by the male and female in dead snags or even sometimes in old Red-cockaded Woodpecker nest sites. Incubation is said to be about fourteen days. Both sexes share in this and in the feeding and care of the young.

Explanation of *Plate XXII*

Four Woodpeckers

Upper left, Ivory-billed Woodpecker (p. 354), male above and female below. **Upper right,** male Red-cockaded Woodpecker (p. 353). **Lower left,** Red-headed Woodpecker (p. 349), adult above and juvenile below. **Lower right,** Pileated Woodpecker (p. 347), male above and female below.

RED-HEADED WOODPECKER. Pl. XXII

Melanerpes erythrocephalus.

This was once one of our commonest and best-known birds throughout the state, but it is now rapidly diminishing in numbers. The causes of its decline are varied, but certainly the main factor operating against it is the competition afforded by the Starling. Since the introduction of the Starling in the vicinity of New York City in the last part of the nineteenth century, it has spread south to Florida and Mexico and west to California. In a considerable part of this area it has become established as a common breeder. Since the Starling generally nests in tree cavities, its habits have brought it into conflict with the Red-headed Woodpecker. After a Red-head laboriously drills and excavates a nest hole, a Starling usurps it through a technique of persistent, aggressive heckling. The Red-head abandons one cavity after another and finally fails to complete its own nesting routine and to rear its own young. At Baton Rouge, in the last twenty years, I have witnessed the arrival and the steady increase of the Starling and the corresponding diminution in numbers of the Red-head. Nest holes in certain dead snags that once produced annually a brood of four to seven Red-heads are now devoid of these beautiful birds and instead are producing brood after brood of the unwelcome Starlings.

The Red-head can hardly be confused with any other bird; its whole head is bright red down to the shoulders. The back, tail, and flight feathers are bluish black, while the remainder of its body appears immaculate-white in the field. In the juvenal plumage the large areas of black and white are present, but the bird's head is dingy brown. The young bird of the year retains this plumage only until fall, when it undergoes a long postjuvenal molt. After this molt it cannot be distinguished from the adult. The call of the Red-head is a loud *queech*, as well as a variety of other notes, including a rolling sound that many kinds of woodpeckers make.

YELLOW-BELLIED SAPSUCKER. *Sphyrapicus varius.* Pl. XXIII

The sapsucker is a common winter resident in all wooded sections of Louisiana. It arrives in late September or early October and is usually gone by the first of April, although a few individuals may sometimes remain until the third week of that month. The species gets its name from its peculiar habit of drilling parallel rows of small holes in the bark of trees, which causes the sap to exude from the cambium layer. The bird then not only drinks the juice

Female Pileated Woodpecker and Young SAMUEL A. GRIMES

Red-cockaded Woodpecker at Nest in Live Pine SAMUEL A. GRIMES

that fills the perforations, but it also eats the small insects that are attracted by the sap. It is doubtful that these holes ever cause the death of a tree, either directly or by allowing the intrusion of disease organisms, but scars may form on the cambium, depreciating the value of the wood for use as lumber. Fortunately, the sapsucker operates on only a small proportion of the trees destined for commerical use.

The best field mark that distinguishes this woodpecker is the conspicuous vertical white patch in the black wing, which, when folded, puts this mark on the *side* of the bird's body. In the Downy and Hairy Woodpeckers the somewhat similar appearing white patch is down the *middle of the back.* Moreover, no other woodpecker has head markings that resemble those of the sapsucker. The call note has been described as a nasal *cheer* that slurs downward.

HAIRY WOODPECKER. *Dendrocopos villosus.* — Pl. XXIII

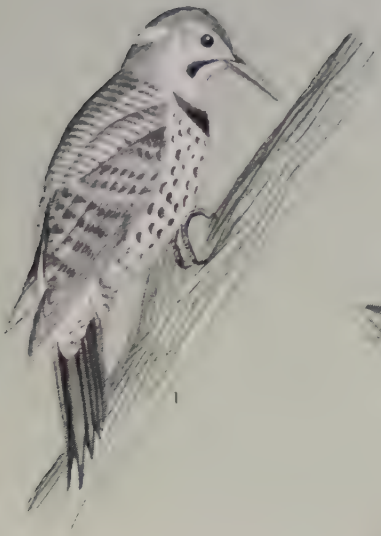
I have no idea how this woodpecker acquired its name, for it certainly does not possess a single hair on its body. It is almost an exact replica of the Downy Woodpecker but differs in its larger size (nine inches in total length, as opposed to six inches), its disproportionately larger bill (well over half as long as the head, instead of less than half), and the unbarred whiteness of its outer tail feathers. Both species have a broad white patch extending down the back. In the sapsucker there are two white patches, one extending down each wing; in other woodpeckers in Louisiana the back is either uniformly colored or conspicuously barred.

The calls of the Hairy Woodpecker are a sharp *pleek* and a rapid rattling sound. Like all woodpeckers it seems to delight in beating a rolling tattoo on a resonant limb, especially in late winter and early spring. These drummings of woodpeckers are somewhat different in each species, particularly in rhythm patterns, and probably serve the same primary function as the more musical songs and notes of other birds—the advertisement of its intention to defend a certain delineated territory.

Explanation of *Plate XXIII*

Male Woodpeckers

1. Yellow-shafted Flicker (p. 346). **2.** Red-bellied Woodpecker (p. 348). **3.** Yellow-bellied Sapsucker (p. 349). **4.** Hairy Woodpecker (p. 352). **5.** Downy Woodpecker (p. 353).



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The Hairy Woodpecker is a fairly common to common permanent resident that is more densely distributed in the northern parishes than elsewhere in the state. The nest is placed in a tree cavity twelve to forty feet from the ground where three to six white eggs are laid.

DOWNY WOODPECKER. *DENDROCOPOS PUBESCENS.* Pl. XXIII

The diminutive Downy Woodpecker is the commonest member of the family in Louisiana. It is present the year around in all parts of the state where there are trees, except on the coastal cheniers, where it is rather uncommon. As noted in the preceding account, the Downy is a miniature edition of the Hairy Woodpecker, being only six inches in total length. But it otherwise resembles its larger relative even in its call note, a nasal, but not quite so sharp, *peet.*

This little bird seems to spend nearly every wakeful moment of its life pecking at the bark of trees. In this pursuit it renders an inestimable service to man, as do all woodpeckers, by ridding our ornamental as well as our commerical trees of noxious insect pests.

The nest of the Downy Woodpecker is found in a variety of situations, but it is usually dug in a decaying limb of a tree and may be located anywhere from five to fifty feet above the ground. The white eggs vary in number, but ordinarily there are four or five.

RED-COCKADED WOODPECKER. Pl. XXII; p. 351
DENDROCOPOS BOREALIS.

This "ladder-backed" woodpecker is primarily a denizen of the longleaf pine forests, although it does sometimes occur in forests of other kinds of pine (especially slash pine) and even more rarely in woods of mixed pine and hardwoods. It is a fairly common permanent resident in suitable forests in the state. Unlike most other woodpeckers, it excavates its nest hole in a *live* pine. The habit of using a live tree is tied in with its peculiar custom of puncturing a series of small holes around the entrance to the nest cavity. From these shallow perforations sticky pitch oozes to the surface (see photograph on page 351). Three or four, rarely five, eggs are laid.

The call of this species is easily recognized, for it resembles the nasal *yank, yank* of a White-breasted Nuthatch, but it is louder, lower in pitch, and somewhat reedy. Two tiny patches of red feathers, which are seldom seen in the field, are located well back on the sides of the head; these are its "cockades," whence its name is derived. The only other "ladder-backed" woodpecker

in Louisiana, the larger Red-bellied Woodpecker, has a conspicuous amount of red on the head.

IVORY-BILLED WOODPECKER. *CAMPEPHILUS PRINCIPALIS.* Pl. XXII

One of the most exciting ornithological experiences of my life occurred on the rainy Christmas morning of 1935. On the previous evening my father and I, with two companions, had entered the Singer Preserve, near Tallulah. This area was at the time a great virgin hardwood bottom land forest. We were in quest of America's rarest bird, a species that few living ornithologists had ever seen except as a museum specimen. Indeed, until the year before, ornithologists had come to believe that this, the largest of all woodpeckers in the United States (total length twenty-one inches), had joined the ranks of the Dodo, Labrador Duck, and Passenger Pigeon. It was a comment to this effect in the offices of the Louisiana Wild Life and Fisheries Commission that prompted a quick denial from Mr. Mason Spencer, a resident of Tallulah, who happened to be present. So incredulous was everyone of his assertion that Ivory-bills still lived near Tallulah that a permit was immediately issued to him to shoot one—this with the certainty that he would produce nothing more than a "log-god," or Pileated Woodpecker. Mr. Spencer, however, promptly vindicated himself, to everyone's amazement, by securing a male Ivory-bill. The specimen was mounted and is still on display in the main foyer of the Louisiana State Museum in New Orleans.

After several unsuccessful attempts to see this great woodpecker myself in the Singer Preserve in the summer of 1934, I was still trying on the Christmas Day mentioned above. My companions and I were out at daybreak, quietly stalking through that magnificent hardwood forest with our ears strained for only one sound—the high-pitched nasal *yamp, yamp*, or as some people interpret it, *kent, kent*, of an Ivory-bill. We saw flock after flock of Wild Turkeys, dozens of deer, and scores of "log-gods," but no sign of the bird that we really sought. A slow drizzling rain that began to fall did not seem to better our prospects, but suddenly, far in the distance through the great wood, a telltale sound reached our ears. Approaching cautiously in the direction indicated by the calls, we soon beheld not one but *four* Ivory-bills feeding on a tall dead snag! There were two males and two females, which, with their powerful bills, were proceeding to demolish the bark on this dead tree, in search, no doubt, for flat-headed beetles, or "betsy-bugs."

I went back several times to this place, once when Drs. A. A. Allen and Paul Kellogg took motion pictures and sound recordings of an Ivory-bill at its nest. Once I even caught, before it hit the ground, a piece of wood that an Ivory-bill, in the tree above me, chipped off with a vigorous chisel-like blow of its beak. But, at least in the Tallulah forest, and maybe everywhere in Louisiana, all that is something of the past. The great forests where Ivory-bills were struggling to survive from 1935 to 1938 are now gone. The last virgin hardwood bottom land swamp on the North American continent fell to the ax because not enough sentiment could be raised to save it! The last authenticated report of the bird in the state is of a lone female that lingered in this area in the spring of 1943 after the felling that same year of a tree that contained a nest and eggs. It is possible that no future generation of Americans will be able to spend a Christmas morning, or any morning, watching four Ivory-billed Woodpeckers go about their daily routine amid huge redgums whose diameters are greater than the distance a man can stretch his arms. I wonder what natural beauties we shall have, aside from the mountains and the sky, a hundred years from now!

Ivory-bills are easily confused with the Pileated Woodpecker, and therefore many erroneous reports of them are received. Three characters should be looked for in a bird suspected of being an Ivory-bill (and all three should be noted before giving the slightest credence to thoughts that the bird in question is this rare species): (1) uniformly ivory-colored bill, instead of one that is black above and pale bluish below; (2) a tremendous amount of white on the back, covering the shoulders and a large portion of the wings, instead of a small amount of white in the wings that is usually seen only when the bird is in flight; (3) a high-pitched nasal call note that may be described as *yamp, yamp, yamp,* instead of a flickerlike, deep-voiced *chuck, chuck, chuck.*

PERCHING BIRDS

Order *Passeriformes*

The Passeres, or perching birds, are but one of the twenty-seven living orders of birds; yet approximately one-half of the 8,000-odd species of living birds in the world today belong to this single order. It is the "pigeonhole," so to speak, that contains such birds as the crows, jays, wrens, warblers, blackbirds, orioles, tanagers, and sparrows. Despite the differences that set all these birds apart from one another, they all have in common many anatomical and behavioristic features not combined in other birds. There are three toes in front and one behind, the latter being well developed and incumbent, that is, on the same level as the front toes and hence adapted for grasping limbs. The helpless, altricial young are hatched naked or nearly so, but soon acquire a fluffy natal down that is replaced by a juvenal plumage before the birds leave the nest. Nearly all Passeres have well-developed songs, and, in virtually all, the nest is an elaborately interwoven structure.

There are many adaptive modifications that enable different passerine groups to live under diverse ecological conditions, or to eat different foods, or in some way to escape severe competition with their close relatives; but these differences do not refute the fact that Passeres are otherwise a remarkably large and homogeneous array of species. Of the 377 species of birds known definitely to occur in Louisiana, the remaining 165 species in this book are Passeres.

Explanation of *Plate XXIV*

Flycatchers

1. Eastern Kingbird (p. 357). **2.** male Scissor-tailed Flycatcher (p. 360). **3.** Great Crested Flycatcher (p. 361). **4.** Western Kingbird (p. 359). **5.** Gray Kingbird (p. 358). **6.** Ash-throated Flycatcher (p. 362). **7.** Olive-sided Flycatcher (p. 366). **8.** Eastern Phoebe (p. 362). **9.** Eastern Wood Pewee (p. 365). **10.** Vermilion Flycatcher (p. 366), male on right, female on left. **11.** Yellow-bellied Flycatcher (p. 363). **12.** Acadian Flycatcher (p. 364). **13.** Traill Flycatcher (p. 364). **14.** Least Flycatcher (p. 365).

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Robert E. Tasher

The Flycatcher Family:

Tyrannidae

This one family, which is confined to the Western Hemisphere, contains 358 species, but only thirty-two inhabit the United States and only fifteen occur in Louisiana. The remainder are found mainly in the tropics, from Mexico through northern South America. There cannot be much doubt that the family originated in the tropics and that the comparatively few species that we possess are immigrants, or derivatives of immigrants, to the United States from this southern ancestral home.

Flycatchers are generally birds of the woods or orchards. They perch on dead trees or limbs, where they quietly survey their surroundings. Suddenly one will fly out, grab an insect out of the air, and then return to the same perch. The bill is generally flattened horizontally and equipped with hairlike structures at the base that fence the corners of the mouth when it is opened and thereby help prevent insects from escaping. Flycatchers as a group are the poorest songsters of all perching birds, a fact that results from their less highly developed syrinx, the organ of voice. In all Louisiana species, with the exception of the Vermilion Flycatcher, the sexes are essentially alike.

EASTERN KINGBIRD. *Tyrannus tyrannus.* Pl. XXIV; fig. 109

Whenever a small bird is seen chasing a large one, the chances are ten to one that the diminutive aggressor is a member of this species. The Eastern Kingbird, or "bee martin" as it is often called, has a special grudge against crows and sometimes will chase one for a mile or more, all the while diving and pecking at the crow's back. Even hawks and vultures are not immune to attack, and heaven help any kind of bird that happens to intrude near this kingbird's nest.

The Eastern Kingbird commonly perches on fences and on telephone wires where, in typical flycatcher fashion, it placidly awaits the passing of an insect which, with superb deftness, it captures on the wing. Many kinds of birds have white *outer* tail feathers, but the Eastern Kingbird is almost unique among passerines in having a broad white band across the *end* of the tail. Otherwise it is blackish above and white below, with a concealed orange crown patch that is not seen except when the bird is in the hand.

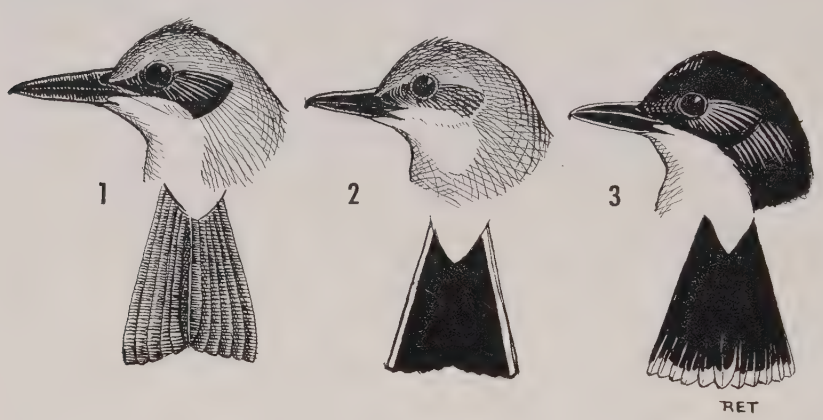

Fig. 109. Heads and tails of three kingbirds: (1) Gray Kingbird; (2) Western Kingbird; (3) Eastern Kingbird.

The species arrives in late March and remains until October, and throughout all but the first few days and the last few weeks of this time it is abundantly and widely distributed in the state. Huge daytime southward migrations have been observed in the initial three weeks of September, after which time the bird becomes increasingly scarce, although rarely an occasional individual lingers until the end of October or into November. The species winters from southern Mexico, through Central America, to Bolivia.

GRAY KINGBIRD. *Tyrannus dominicensis.* Pl. XXIV; fig. 109

This tropical species occurs regularly in the United States only in Florida where it is a fairly common summer resident along both coasts of the peninsula, nesting in moderate numbers on the northern Gulf Coast as far west as Pensacola. Although a pair has been known to nest at Fort Morgan, Ala., the occurrence of the species there has been intermittent. Its inclusion on the list of Louisiana birds is based on two records. The first of these relates to an in-

dividual that I saw in migration just thirty-two miles off the mouth of the Mississippi River on May 11, 1948, as I was returning by boat from Yucatán. The bird passed several times within a few feet of the bridge, on which I stood, before it finally flew ahead of the boat in the direction of Southwest Pass. Since we were then almost in sight of land, toward which the bird was headed when it disappeared from view, it almost certainly made a landfall on the coast of Louisiana. The second record is of an individual that I observed with binoculars at close range on Grand Isle on May 3, 1954. Because it is desirable always to have at least one museum specimen of every species on the state list, I shot at the bird in an attempt to procure it but unfortunately failed to bring it down. Robert J. Newman, who was with me at the time but who did not see the bird until after it flew, clearly noted its large bill and pale coloration as it passed close to him before disappearing from the view of each of us. Newman asked if the bird were not a Gray Kingbird before I had a chance to convey to him my own conclusions regarding it.

The Gray Kingbird resembles the Eastern Kingbird but is slightly larger, is gray above instead of black, and lacks the white tips to the tail feathers. The head is predominantly marked by a dusky-gray auricular patch.

WESTERN KINGBIRD. *Tyrannus verticalis.* Pl. XXIV; fig. 109

The Western, or "Arkansas" Kingbird, a species of the Great Plains and the West, is a very rare spring transient but moderately common fall migrant through Louisiana (March 15 to May 21; July 19 to November 25). This kingbird is approximately the same size as its close relative, the Eastern Kingbird, but is easily distinguished from it by its yellowish, instead of white, under parts; by its gray head and greenish-colored back, instead of all-blackish upper parts; and by its white-bordered, instead of white-tipped, tail. Thus in color it resembles a Great Crested Flycatcher somewhat more than it does the Eastern Kingbird, but it differs in having a shorter tail that is predominantly black instead of reddish brown and in having the top of the head and shoulders pale gray, contrasting with the color of the back, instead of as dark as the middle of the back.

The best chance of seeing this species in Louisiana is to scrutinize closely all kingbirds seen on telephone wires from late August to December. As many as five have been seen on a drive between Golden Meadow and Grand Isle, and an equal number has been observed in going from Cameron to Little Chenier.

SCISSOR-TAILED FLYCATCHER. *Muscivora forficata.* Pl. XXIV

This superbly-colored and agile-winged flycatcher is not frequently seen in Louisiana, except in the southwestern section, where it is fairly regular in migration, and in northwestern Louisiana, where it is not uncommon during the summer. In Texas and Oklahoma, however, it is one of the commonest birds of the roadside and farm. Oklahoma has even chosen it as its state bird. Its color is predominantly pearl-gray, but the under wing linings and sides of the breast vary from a brilliant salmon-pink to a saturn-red. Its exceedingly long, nine-inch, "scissor" tail on a body that is no larger than that of an Eastern Bluebird lends it unusual gracefulness. When perched, the "scissors" are often held together, but, when the bird becomes excited near its mate or its nest or when it is in pursuit of an insect, the deeply-forked tail opens and closes.

The Scissor-tail has been recorded in Louisiana in every month of the year except February, but, outside its breeding area in northwestern Louisiana, it is to be expected only in periods of migration. Pecan orchards are a preferred breeding habitat in Louisiana, as are also scattered tall trees in open fields and pastures. The nest, a rather bulky structure that is lined with a heavy layer of cotton, is generally placed toward the end of a limb twenty to thirty feet from the ground. The eggs are usually five in number and are clear white or pinkish white, blotched with shades of dark brown.

Herbert Brandt, in his *Texas Bird Adventures*, describes the interesting courtship behavior of the male Scissor-tailed Flycatcher in the following well-chosen words: "During his courting days and even until the eggs are hatched, the male engages in one of the most fantastic of feathered sky-dances. Mounting the air to a height of perhaps a hundred feet, he starts his routine by plunging downward for about a fourth of the distance, then turns sharply upward to nearly the previous height; and he repeats this up and down zigzag course several times, emitting meanwhile a rolling, cackling sound like rapid, high-pitched hand-clapping. This he seems to produce by loud snapping of the mandibles, or it may be a vocal effort, or both, though I observed it to be the former. The last upward flight may take him still higher, and his path then becomes a vertical line. When the flycatcher reaches the zenith of this flight, so vivacious is his ardor that over he topples backward, making two or three consecutive reverse somersaults, descending like a Tumbler Pigeon, all the while displaying to his mate the soft, effective, under-wing colors."

DERBY FLYCATCHER. *Pitangus sulfuratus.* Fig. 110

A single individual shot at Chenier au Tigre, in Vermilion Parish, on May 23, 1930, furnishes the only positive record for this species in Louisiana. Its chunky shape, rufous wings and tail, brilliant yellow under parts, and the heavy black lines on the crown and from the bill through the eye and ear regions, are the combination of characters that serves to set this species apart. Its note is a clearly enunciated *kisk-ka-dee*, and there are some people who advocate changing the bird's name to those letters. The Derby Flycatcher is a Mexican species that normally occurs in the United States only in the lower Rio Grande Valley. Its appearance within the borders of Louisiana is inexplicable.

Fig. 110. Derby Flycatcher. The under parts and crown patch are yellow, the line over the eye is white.

GREAT CRESTED FLYCATCHER. *Myiarchus crinitus.* Pl. XXIV

Nearly every kind of bird has some special behavior pattern or peculiarity that the ornithologist finds interesting, and this species is certainly no exception. What does it do but place a discarded snake skin in its nest! I have known

of only one nest of a Great Crested Flycatcher without this accessory, and strangely enough, it contained a twentieth-century substitute—a piece of cellophane! Why a bit of old snake skin is placed in the nest, only the Great Crested Flycatcher knows. One common explanation is that "it scares away the bird's enemies," but another explanation is simply that snake skins are readily available material and that their presence in the nests of Great Crested Flycatchers is no more peculiar than the presence in other birds' nests of special materials, such as horsehair, mud, thistle, or some particular fiber or kind of grass, depending on the species of bird and its special desideratum.

The Great Crested Flycatcher has the upper parts brown, tail reddish, throat gray, and belly yellow. The feathers of the crown are capable of being raised as a sort of crest, particularly when the bird gives its characteristic *pwet, pwet or wheeep* call notes. The Great Crested Flycatcher cannot be readily confused with any other species in the state except the rare Ash-throated Flycatcher, which is browner above, much paler gray on the throat, and paler yellow on the belly.

The nest is placed in a tree cavity or old woodpecker hole, and contrary to the general rule that eggs laid in such darkened places are white, the Great Crested Flycatcher lays creamy-colored eggs that are heavily streaked longitudinally with purplish brown. The species is strictly a summer resident and to me is one of the real harbingers of spring in Louisiana, where it arrives in the last week of March to remain here until mid-October.

ASH-THROATED FLYCATCHER. *Myiarchus cinerascens.* Pl. XXIV

This species is a pale western edition of the Great Crested Flycatcher. The throat is pale gray or grayish white, and the belly, instead of being a rich lemon-yellow, is only slightly yellowish in color. There are but three records of its occurrence in Louisiana, all in midwinter or early spring (December 23, January 4, and March 20) and all in southern parishes (Cameron, Pointe Coupee, and East Baton Rouge). The normal range of the species is in the western part of the United States and in Mexico.

EASTERN PHOEBE. *Sayornis phoebe.* Pl. XXIV

The Eastern Phoebe is a common winter resident in all parts of the state, arriving here in late September and remaining sometimes until late April or early May. Although its diet, like that of all flycatchers, is composed principally of insects, it will, on occasion, eat berries. The latter fact doubtless accounts

for its ability to survive periods of cold, inclement weather, when insect life is dormant.

The Eastern Phoebe may be recognized by its dark, olive color above and its pale yellowish under parts and by its lack of wing bars or contrasting markings. It is, indeed, a quite nondescript bird. The best field mark of all is its behavior of constantly wagging its tail. The somewhat similar Eastern Wood Pewee does not wag its tail and has two prominent wing bars.

Although the Eastern Phoebe has never been found nesting in Louisiana, I would not be greatly surprised if it were someday discovered doing so in the northwestern part of the state. It is known to breed as far south as north central Alabama, northern Mississippi, and parts of Arkansas, building its bulky nest on beams and rafters, under bridges, and beneath the overhanging banks of streams.

YELLOW-BELLIED FLYCATCHER. *EMPIDONAX FLAVIVENTRIS.* Pl. XXIV

The genus *Empidonax* comprises one of the most difficult groups of species to identify in the field, and for this reason the inexperienced observer should be extremely cautious in making positive specific determinations. This and the following three species are all small, rather nondescript birds, greenish or olive above and gray, whitish, or slightly yellowish below. There is a great deal of individual and seasonal variation in color. For instance, some fall examples of the Acadian Flycatcher are just as extensively yellow below as most Yellow-bellied Flycatchers.

With the exception of the locally very common Acadian Flycatcher, the species of *Empidonax* are birds of passage in Louisiana, numerous only in fall when they are generally silent. This is unfortunate, for the call notes are universally regarded as the best means of field identification of birds in this genus (see discussion under Traill Flycatcher). Despite the great similarity of the various species, they are unquestionably perfectly good biological entities in nature, for they do not interbreed insofar as is known, and they all have remarkably different behavior patterns. One species will nest in a northern coniferous forest, another in a southern bottom land swamp. One will build its nest of moss, lined with grasses, on the ground beside a root, while another will construct its nest of plant fibers, rootlets, and fine strips of bark in a tree crotch five to fifteen feet up. In one species the eggs may be immaculate-white, in another cream colored with cinnamon-brown spots on the larger end.

So, despite the great difficulties that the field ornithologist may have in distinguishing these little flycatchers, the birds themselves apparently can always recognize their own kind.

On the basis principally of specimens in the Louisiana State University Museum of Zoology, the Yellow-bellied Flycatcher appears to be an uncommon spring and only a moderately common fall migrant throughout the state, recorded from April 26 to May 23 and from August 9 to October 22. Its apparent rarity in spring may be due in part to the fact that it is a late migrant, possibly passing through mainly in May, when we seldom have adverse weather conditions to pile up migrants; hence these little birds may go through without being detected.

ACADIAN FLYCATCHER. *Empidonax virescens.* Pl. XXIV

This is one of the commonest small birds in the wooded sections of Louisiana in summer, the only member of the genus *Empidonax* that breeds here. It swings its cup-shaped nest hammock-wise between horizontal twigs, usually ten to fifteen feet from the ground and usually in a swamp or at its edge. It lays two to four whitish eggs that are finely spotted, particularly near the large end. Its call is a *peet* or a rather explosive *pee-e-yuk*.

A world-famous ornithologist once wrote: "This species has the upperparts fully as olive green as the Yellow-bellied Flycatcher, but the underparts are never entirely yellow, and the throat is always white." Apparently, however, this distinguished scientist had never seen a representative collection of fall specimens, for the series at Louisiana State University contains numerous examples in which the entire ventral surface, including the throat, is a clear, pale yellow, save for the slight duskiness of the chest. The color of the under parts of the Yellow-bellied Flycatcher is, if anything, duller by contrast, but the color of the under parts is not a reliable field character.

The Acadian Flycatcher arrives in early April and stays with us until early October or, rarely, the beginning of November. It winters in Colombia and Ecuador.

TRAILL FLYCATCHER. *Empidonax traillii.* Pl. XXIV

The Yellow-bellied and Acadian Flycatchers are olive-green above and yellowish below, while the Traill and Least Flycatchers tend to be olive-brown above and whitish below. As noted in the account of the Yellow-bellied Flycatcher, all four may be confused with each other, and, consequently, museum

specimens are the only reliable basis for determining the exact seasonal status of the different species in areas where they are purely transients and where, therefore, they do not often utter their diagnostic call notes, build their distinctive nests, or show their special habitat preferences. Positive spring records of the Traill (sometimes called "Alder") Flycatcher in Louisiana are few in number, but in early fall it seems to be common from August 14 to October 22. The willows along our larger rivers are its preferred habitat, and there it can nearly always be found in numbers during the period of its fall passage.

The call of the Traill Flycatcher is often described as a sneezy *fitz-bew* or a *way-be'-o*, while that of the Least Flycatcher is a sharp *che-bec'*. The Yellow-bellied Flycatcher has a simple, lackadaisical *chu-wie*.

LEAST FLYCATCHER. *EMPIDONAX MINIMUS.* Pl. XXIV

This species has a whiter and more distinct eye ring than the other species of the genus *Empidonax* in Louisiana. This character combines with its smaller size and its tendency to sit low in a bush or tree and jerk its tail to provide fairly reliable field marks. On the basis of the available evidence, the Least Flycatcher seems to be moderately common in spring in northern Louisiana but fairly plentiful throughout the state in fall. In the latter season it is seen from early September to late October. The one winter record for the state is that of a specimen that I collected on December 31, 1954, at Johnson Bayou, in Cameron Parish.

EASTERN WOOD PEWEE. *CONTOPUS VIRENS.* Pl. XXIV

The Eastern Wood Pewee rivals the Acadian Flycatcher for the honor of being the commonest woodland representative of this family in Louisiana in summer. But, whereas the Acadian Flycatcher is mainly a bird of shaded bottom lands, the pewee more often frequents dry wooded uplands and pine forests. It is a nondescript bird with very dark upper parts ranging between olive and olive-gray, a color that separates it, the Eastern Phoebe, and the Olive-sided Flycatcher from the more greenish species of the genus *Empidonax* but not from each other. The under parts are grayish, washed with olive-gray on the sides. The wing coverts are narrowly tipped with whitish, forming two indistinct wing bars. The somewhat similar Eastern Phoebe is larger and darker than the Eastern Wood Pewee, is generally more yellowish beneath, and

continually wags its tail. The large, chunky Olive-sided Flycatcher has white tufts near the base of the tail on each side. Neither the Eastern Phoebe nor the Olive-sided Flycatcher has wing bars.

Fortunately, the pewee is one of the most vociferous of all small birds, calling its name with a plaintive *pee-a-wee, pe-wee* from dawn to dusk, even in the hottest part of the day. It remains for a long time with us, arriving in late March and staying until late October, or rarely to November, before its return to Central and South America. The nest is made of grasses, rootlets, and mosses, is densely covered with lichens, and is saddled on a horizontal limb twenty to forty feet up. The three or four eggs are white except for a wreath of dark markings around the large end.

OLIVE-SIDED FLYCATCHER. *Nuttallornis borealis.* Pl. XXIV

This species is unaccountably rare in Louisiana. Since it breeds in coniferous forests across the entire breadth of the United States and even southward along the Alleghenies and winters in northern South America from Colombia to Peru, one would suppose that it would pass through here in going to and from its summer and winter homes. But there are only two records anywhere in the state in spring and less than two dozen records in fall.

The Olive-sided Flycatcher is a rather large-headed, chunky flycatcher, about the size of an Eastern Bluebird. Above it is dark greenish fuscous and the breast has a dark grayish patch on either side, separated by a white streak passing from the throat to the lower belly. A tuft of white feathers usually protrudes on each side from beneath the wings near the base of the tail. Although the Olive-sided Flycatcher might conceivably be confused with the Eastern Wood Pewee, the latter is not so heavy-breasted and chunky, nor does it have the white tuft on each side of the base of the tail. The note of the Olive-sided Flycatcher is an emphatic three-syllabled "Come right *here*," or "Hip, three *beers*."

VERMILION FLYCATCHER. *Pyrocephalus rubinus.* Pl. XXIV

The regular presence in winter of a few scattered Vermilion Flycatchers in Louisiana and elsewhere on the northern Gulf Coast is not easy to explain, since the species is a bird of the southwestern United States and Mexico. To reach Louisiana in fall these little flycatchers must, as a minimum, move more than a thousand miles eastward (if our birds come from Nevada or Utah) or hundreds of miles to the *north*east (if they come from the lower Rio Grande

Valley). In either case, they come at a time when migratory birds ordinarily are moving southward. The species arrives in October and departs usually by early March. City Park in New Orleans seems to be the one place where a few individuals can be found almost every winter, although an adult male wintered on the Louisiana State University campus for several years in succession.

The favorite habitat of the Vermilion Flycatcher when it is in Louisiana is the periphery of a small pond that has at least a few willows on its edge. The male is resplendent in color and is so distinctively marked that it could hardly be mistaken for any other bird.

The top of the head and entire under parts are a brilliant vermilion, and the back, wings, tail, and a line through the eye are black or slaty black. The immature males and the females have the throat and upper breast whitish and the lower under parts dull reddish or saffron-yellow, streaked with dusky.

The Lark Family: *Alaudidae*

HORNED LARK. *Eremophila alpestris.* Fig. 117

This species is a true lark and hence is in no way related to the meadowlark (a member of the oriole family). The Horned Lark is very common in the northern and western parts of the United States, but only rarely does it visit Louisiana. There are fewer than a half-dozen records in the state—that is, excluding those from Cameron Parish, where the small Texas coastal plains subspecies probably once nested and may still do so in small numbers. All the five records in the state of northern migrants are in January and February, and all but one are from localities in close proximity to the shores of Lake Pontchartrain.

Ernest Thompson Seton aptly describes the Horned Lark as follows: "It is strictly a ground-bird, never perching in trees, although it commonly alights on the top of a fence post, or other low level surface. When encountered on a pathway it often runs before the pedestrian after the manner of a Vesper Sparrow, from which bird, however, it may be distinguished by the black

feathers in its tail, by its brown back, and by the black marks on its face; also by the fact that it *runs*, but does not *hop*, and when it flies it usually utters a whistle. . ."

Periods of cold weather, especially those producing a blanket of sleet or snow in the regions north of Louisiana, are probably the best times to look for visitations of Horned Larks. The short grass fields of airports are a favorite habitat of this lark and, if watched regularly in winter, might also produce other interesting species of birds that prefer this kind of situation to all others—the Sprague Pipit and the various longspurs. The nest of the Horned Lark is built in a saucer-shaped hole scratched out by the birds and lined with prairie grasses and a variety of soft materials, on which three or four grayish, densely speckled eggs are laid.

The Swallow Family: *Hirundinidae*

Swallows are birds of small size with long pointed wings and great powers of flight. Indeed, they are among the most graceful of all birds on the wing, wheeling and turning with ease, first one way and then another, or skimming low over the ground or the waters of a lake, in quest of their diet of insects.

In late summer and fall, resident and migrant populations of swallows congregate in immense flocks, lining telephone wires along our roads and over our marshes (see photograph on page 369). Although these aggregations, sometimes of thousands of individuals, may remain fairly constant in size from August to November, there is a decided turnover in the species composition of the flocks. First the assemblages are made up of Rough-winged Swallows, which are later joined by migrant Barn and Bank Swallows and still later by Cliff and Tree Swallows. The last large aggregations of swallows are almost wholly comprised of Tree Swallows, for the other species, except for a few Rough-wings, have moved on to warmer regions south of the Gulf of Mexico.

Male Yellow-shafted Flicker in Nest Hole SAMUEL A. GRIMES

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Migrating Tree Swallows Pause to Rest ALLAN D. CRUICKSHANK

Female Purple Martin Feeding Young in Gourd SAMUEL A. GRIMES

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TREE SWALLOW. *Iridoprocne bicolor.* Pl. XXV; p. 369

The Tree Swallow is an abundant migrant throughout Louisiana (from early March to early May and from September to late November) and usually a common winter resident in the southern half of the state, being particularly numerous in fall and early winter. When the latter season is not too severe, the bird remains in south Louisiana in sizable numbers, but always in the vicinity of a lake or a large expanse of coastal marsh. If, however, the weather in January is marked by several days of continuous cold the Tree Swallow may become greatly diminished in numbers and remain so until migrants begin to reappear in early spring.

The only known instance of the species' nesting in the state is that of a small colony that resided in some hollows in dead snags near the middle of Eagle Lake, on the boundary of Louisiana and Mississippi, northeast of Tallulah. Nesting situations such as this are typical, although in the North, Tree Swallows sometimes come in close to human habitations and occupy nesting boxes. The nest is usually composed of straw, weed stalks, and a copious supply of feathers. The four to six eggs are immaculate-white.

The Tree Swallow is easily distinguished from other swallows by its color, which is bluish green above and immaculate-white below. The outer tail feathers are slightly longer than the middle ones. Immatures are dull brownish gray above with only a slight greenish tinge, but their all-white under parts still make them easily separable from the other species.

BANK SWALLOW. *Riparia riparia.* Pl. XXV

The statements by some early writers on Louisiana birds that this species nested in the state probably resulted from confusion of the Bank Swallow with the Rough-winged Swallow, since both are brown in color and both build their nests in tunnels in clay banks. There is no satisfactory evidence that the present species has ever bred within our borders, although it does occur here numerously in migration. It can be separated from the Rough-winged Swallow by its slightly smaller size and by the distinct grayish-brown band across its otherwise white breast.

The Bank Swallow generally arrives at the end of March or in the first week of April and remains until mid-May. In fall it reappears usually near the middle of July and continues to pass through until at least the first week of October.

ROUGH-WINGED SWALLOW. Pl. XXV; fig. 111

Stelgidopteryx ruficollis.

This swallow was first discovered by John James Audubon on the banks of Bayou Sara. Late one afternoon, standing on the edge of the bayou, he shot a swallow as it circled about him, and his dog retrieved it. Taking the specimen from the dog's mouth, he stood idly examining it, thinking at first that it was a Bank Swallow. Then to his surprise he noted a peculiar roughness to the fore edge of the outer primary, which, on close inspection, he found to

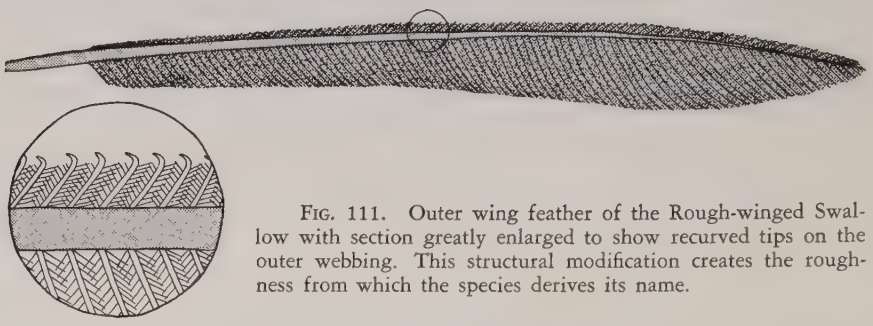

Fig. 111. Outer wing feather of the Rough-winged Swallow with section greatly enlarged to show recurved tips on the outer webbing. This structural modification creates the roughness from which the species derives its name.

be due to a tiny, recurved hooklet on each barb of the outer web. Later, at Charleston, S. C., he obtained another specimen and was then convinced that he had found a species new to science. Indeed, the Rough-winged and Bank Swallows are rather easily confused unless one knows what to look for. Both are brown backed, but their under parts are very dissimilar. In the Bank Swallow, the throat and belly are pure white separated by a brown band across the breast. In the Rough-wing, the throat and upper breast are dingy brown and only the lower belly is white; there is no indication of a breast band.

The Rough-wing winters in small numbers in southern Louisiana, notably at False River, in Pointe Coupee Parish, but the species is mainly a summer resident, arriving here in mid-March and sometimes remaining in large numbers until mid-November. Nests are built at the end of a tunnel in a river bank or a highway cut. The four or five eggs are pure white.

Explanation of *Plate XXV*

Adult Swallows

1. male Barn Swallow (p. 373). **2.** Cliff Swallow (p. 373). **3.** Bank Swallow (p. 371). **4.** Purple Martin (p. 374), male in foreground, female behind. **5.** Rough-winged Swallow (p. 372). **6.** male Tree Swallow (p. 371).

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BARN SWALLOW. *Hirundo rustica.* Pl. XXV

This is the only swallow in Louisiana with a reddish breast, bluish back, and a deeply-forked tail. Young birds of the year are paler beneath and somewhat resemble Cliff Swallows but lack the pale rufous rump patch of the latter and have a forked tail.

Barn Swallows migrate thousands of miles in passing from their main summer range in the northern United States and Canada to their winter home in South America. In doing so a considerable part of the population crosses the broad expanse of the Gulf of Mexico, winging its way across this trackless six hundred miles of water as easily as if guided by a map, chronometer, and sextant. When Barn Swallows reach the lower Mississippi Valley in spring, we see them singly and in flocks feeding over our fields and levees as they move northward to their breeding grounds.

Nests are built of mud, grasses, and feathers and are placed under eaves of barns and other buildings or on rafters. There are no records of Barn Swallows breeding in Louisiana, except for a dozen or so that annually build their nests and raise their young on the sleepers under bridges on the Sabine Refuge in southwestern Louisiana and the several pairs that nest on one of the few buildings on Isle au Pitre in Mississippi Sound, off the coast of southeastern Louisiana. The latter colony definitely, and almost certainly the one on the Sabine Refuge also, are representative of a race of Barn Swallow known otherwise only from the islands off the coast of Mississippi, Alabama, and northwestern Florida. The race is characterized by the males having nearly white, instead of reddish, under parts. Mainly these pallid coastal Barn Swallows build their nests on the walls of the old forts. Where they nested before these brick structures were built by the early settlers is a mystery. The nearest red-breasted populations in summer are several hundred miles inland, in northern Alabama, northern Mississippi, and west-central Arkansas. By early August migrants from north of us begin to return through Louisiana and continue to do so until late October and early November. In spring Barn Swallows return in mid-March and are abundant from then until the middle of May.

CLIFF SWALLOW. *Petrochelidon pyrrhonota.* Pl. XXV

The Cliff Swallow breeds extensively across the breadth of North America but is absent from Louisiana and other parts of the Gulf coastal plain of southeastern United States except as a migrant. It winters in South America. Being essentially a blue-backed swallow, it is hardly to be confused with any other

species except possibly the Barn Swallow. Instead of having the upper parts uniformly blue and the under parts reddish, as does the latter species, it displays a variety of colors and markings; the forehead is white, the back streaked lightly with white, the rump pale rufous, the tail blackish, the sides of the head chestnut, the breast gray with only the belly white, and the chin and throat black. Unlike its relatives, which have the tail forked (Barn Swallow) or notched (Rough-winged, Bank, and Tree Swallows), the Cliff Swallow has tail feathers of almost equal length.

The species is a fairly common but late migrant in spring, passing through Louisiana in its greatest numbers in May and early June. In fall it may be seen regularly and in moderate numbers from early August until late October.

PURPLE MARTIN. *Progne subis.* Pl. XXV; p. 370

This is my favorite of all swallows, and possibly of all land birds. Almost as far back as I can remember I have had martin boxes in my yard and each year have looked forward to the return of the occupants. The cheery, gurgling note that these birds make is generally the first harbinger of spring, for the Purple Martin is the earliest bird to return to Louisiana after a winter sojourn in the lands south of the Gulf of Mexico. Almost always, in the southern part of the state, the species is back with us by the first week of February, and sometimes the advance guard arrives in late January.

My high regard for the martin has come about in part through having handled more than 500 of them alive in the course of banding the inhabitants of my nesting boxes. There can be few greater thrills to the naturalist than that of banding an adult bird or nestling and witnessing its return to the exact spot of its banding after it has traveled a thousand miles or more to spend the winter in some distant land. What an excitement it is to hear again the familiar twitter of the first Purple Martin in spring and to see one perched on the nesting box with an aluminum band on one of its legs and a series of color bands on the other, identifying it as a "return"! Since 1944 nearly all the martins in my boxes have been marked with band combinations of one to three of the following colors: white, red, green, blue, black, yellow, and orange. Each bird has its own special arrangement of colors and hence need not be recaptured for the purpose of reading the actual number on the aluminum band. For example, a male bird with red, yellow, and blue bands (reading from top to botom) on the left leg and the aluminum band on the right leg is U. S. Fish and Wildlife Service band number 47-157223. The same arrangement on a female is number

46-111760. The various colors can be utilized in hundreds of different combinations and thus provide an almost unlimited means of individually identifying each bird in a colony over a period of many years. This permits detailed studies of interrelationships and social behavior within the framework of the colony. It is a way of ascertaining if mating between two individuals extends over from one season to the next, if any brother-sister matings or other forms of inbreeding occur, if any form of polygamy exists, if more than one brood is raised, and numerous other details in the lives of the birds, including facts relating to longevity, migration routes, and winter homes.

The Purple Martin, which is our largest swallow and the only one that is black bellied, cannot easily be mistaken for any other bird. The male is such a dark blue that it appears in many circumstances to be jet-black. Even a bird in the hand is best described as *blue-black*. The female is grayish white on the throat and breast and white on the belly and under tail coverts. There is an indistinct light collar extending around the neck, and the forehead is pale, grayish brown; the top of the head, back, wings, and tail are predominantly grayish black, usually with only a trace of blue, hence much duller than in the adult male. Young males cannot be distinguished with certainty from females. I used to think I could tell them apart by the amount of gray on the forehead until several birds that I banded and recorded as "immature females" returned in a later year in full male regalia. The molt transforming young males into their adult plumage generally takes place after the end of the first breeding season, although sometimes it occurs during the first-year breeding activities.

Martins arrive early, as already noted, and selection of compartments in a nesting box begins promptly. Actual nesting, however, is delayed until April, with subadults sometimes commencing as late as the end of May or early June. The three to five (rarely eight) dead-white eggs are laid in a nest made of leaves and sticks on a thin foundation of mud, which is banked up in front to prevent the eggs from rolling out. Often during the period of incubation a few fresh green leaves are found on top of the eggs during the day. It has been suggested that the evaporation of moisture from the leaves may serve a useful function in raising the humidity within the nesting compartment.

Incubation takes an average of thirteen days, but one set of eggs that I checked required nineteen days to hatch. Such variation could be the result of discontinuous brooding, which causes arrested development of the embryo, for there is some evidence that both the male and female martins sometimes leave the eggs unattended at night, presumably to go to huge communal roosts.

This departure at night from the nest boxes is definitely true of the males after the end of April. Very few of them can then be trapped by closing the boxes after dark, for they simply do not regularly spend the nights there. I often wondered what became of them until it was discovered that an estimated 10,000 or more birds roost nightly on the superstructure of a hydrogen tank in the center of the huge Esso refinery north of Baton Rouge.

The young remain in the nest for about four or five weeks, and, although it has been said that they return to the nest box for a week or ten days after first leaving it, this claim is not substantiated by my own banding studies. Never have I known either the young or the parents to return, even momentarily, after the last of the brood has departed. Martins frequently alight on the boxes after all young are out of the nests and these visitors would be regarded as the original occupants were it not for the absence of telltale leg bands. Some authors have claimed that the martin raises two, or sometimes even three, broods; but again no support to this assertion has come forth from banding studies—the only reliable means whereby the matter can be analyzed. I have found fresh eggs in my boxes as late as June 4, but they belonged in most instances to new and not yet banded subadult males and presumably subadult females.

When the chores of nesting are over, martins from a large area congregate in huge flocks. The Baton Rouge roost mentioned above has been estimated to contain as many as 14,000 birds in early August. After this time the number gradually diminishes until by mid-September nearly all the birds are gone. The latest date on which a Purple Martin has definitely been seen in Louisiana is October 9, but an observation of the bird any time in October is exceptional. The species winters for the most part in Brazil.

Martins are sociable birds that like each other's company and hence usually occupy any sort of multi-compartmented house, whether it be made of mahogany or of a soap box and whether it be painted or unpainted. Martins are great aerial acrobats that require open spaces to perform their maneuvers. Many times they may be seen to come in at a height of a hundred feet or more, and, when nearly over the nesting box, fold their wings back close to the body and literally plummet earthward. It would seem for a moment that they would surely crash, but, just as the birds reach the level of the box, the wings are thrown out, the tail is spread, and the birds abruptly halt in mid-air as they gently alight on the porch of the box. Because of antics and performances such as these, martins seem to prefer boxes more or less in the open and situated ten

to fifteen feet above the ground. Instructions and specifications for the building of martin boxes are given on page 89.

Indians were very fond of martins, and long before the arrival of the white man they put up hollowed-out gourds on poles for them to nest in, like the one shown on page 370. This practice was taken up by plantation Negroes and persists until this day. Despite the martin's popularity and the great number of houses erected for it, there is still apparently a "housing shortage." Consequently, many of the birds nest in holes under the eaves of buildings, in open horizontal pipes, and in a variety of other situations. The most unorthodox nesting site with which I am familiar was in a rural-type mail box, four feet above the ground, on the edge of the Louisiana State University campus.

The Crow Family:

Corvidae

BLUE JAY. *Cyanocitta cristata.* Fig. 112; p. 379

John James Audubon's magnificent portrait of the Blue Jay depicts three of these birds devouring eggs stolen from the nest of another species. In referring to the drawing, the famous naturalist has this to say about his subjects: "Reader, look at the plate in which are represented three individuals of this beautiful species,— rogues though they be, and thieves, as I would call them, were it fit for me to pass judgment on their actions. See how each is enjoying the fruits of his knavery, sucking on the egg which he has pilfered from the nest of some innocent Dove or harmless Partridge! Who could imagine that a form so graceful, arrayed by Nature in a garb so resplendent, should harbour so much mischief;— that selfishness, duplicity, and malice should form the moral accompaniments of so much physical perfection!" In so writing, Audubon sums up what most of us feel with regard to the Blue Jay. We disapprove

of its habit of eating the eggs and young of other birds, but we would not wish our surroundings to be without its beauty, its querulous but pleasing calls, and its garrulous, raucous screams. And, after all, these depredations are not very serious. Even in places where I have seen it taking a heavy toll of the eggs and young of the melodious Wood Thrush, there never seemed to be any shortage of the latter species.

The Blue Jay is an abundant permanent resident in Louisiana, and its numbers are augmented in winter by the arrival of migrant populations from farther north, possibly from as far away as Canada. The calls of the species are varied. One has been alluded to as the "pump handle" note, so closely does it resemble the sound made by that device. A roving band moving through a wood often shouts "jay, jay." Commonly jays imitate the Red-shouldered Hawk by emitting a loud scream that can hardly be distinguished from the call of the hawk. Rarely one will be heard singing a low, gurgling, ventriloqual song as it perches quietly in a tree, probably near its mate and nest. The latter is a bulky but compact structure of sticks and rootlets, usually located ten to twenty feet up in a tree crotch and containing four to six olive-green eggs variously blotched with brown.

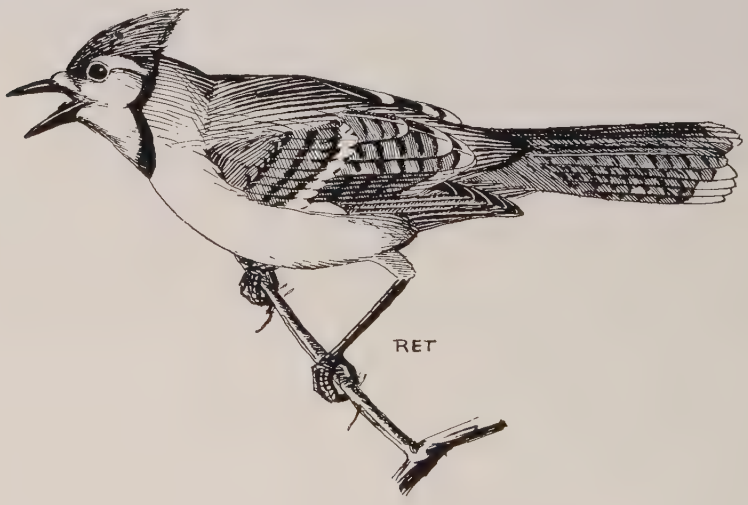

Fig. 112. Blue Jay.

Young Blue Jay Among Weigela Blossoms ALLAN D. CRUICKSHANK

COMMON CROW. *Corvus brachyrhynchos.* Figs. 113; 114

Aside from students of ornithology, there are probably few people in Louisiana who realize that we have in our state two species of crows, the Common Crow and the Fish Crow. Like most crows the world over, ours are both solid black, and were it not for their dissimilar calls, we could hardly distinguish them. The Common Crow is slightly the larger of the two, but this size difference is not readily apparent in the field. Its call, however, is a deep-voiced *caw-caw*, while that of its relative is a nasal, rather tin-horn *car-car*.

Fig. 113. Common Crow.

The Common Crow occurs abundantly over most of the state lying north of the coastal marshes, while the Fish Crow ranges along the coast and extends northward only along the major rivers. The two species build bulky, virtually indistinguishable nests of sticks, twigs, and rootlets, lined with grasses and moss, thirty to fifty feet up in trees. The variably colored eggs, which are generally bluish green and heavily blotched with various shades of brown, are likewise so similar in the two species that only an expert oologist can tell them apart with a high degree of accuracy.

Crows are thoroughly disliked by nearly everyone because of the damage they do to crops, especially corn, and because of the toll they take of the eggs and young of other species. But despite their bad reputation, crows are highly respected for their seeming intelligence by those who know them. Indeed, the

facetious statement has been made that "if human beings were birds, very few of them would be crows." So wary has the species become of man that only by partially concealing oneself and employing a vocal or mechanical imitation of its call can one bring a crow into gun range.

I am in favor of "crow shoots" because I am convinced that the species is highly destructive of crops and other birds and because I believe its numbers are now far beyond the normal limits set by nature. The excessive number of crows is probably the result of changes in our landscape coincident with the great expansion of agriculture in this country in the last hundred years. Therefore, the crow may need control methods applied against it.

I am further convinced that a segment of the American public, which no longer has access to an abundance of game, must have "something to shoot at." Unlike most other peoples in the world, we are, in the twentieth century, still a nation of "shotguns over every mantelpiece." With this ample supply of guns at hand and with ammunition obtainable in the corner grocery, the legions of would-be hunters in this country are unfortunately encountering greater and greater difficulty in finding an outlet for their hunting instincts. This dilemma becomes acute when the short hunting seasons are over, and thus many are turning to shooting nongame birds. I would prefer to see this enthusiasm vented on the noxious crow rather than, as is often the case, on our beneficial hawks. This indiscriminate killing of hawks and virtually everything that flies is deplorable and reprehensible but is, of course, an offense committed by no true sportsman. However, if gunners must shoot nongame birds, let it be Common and Fish Crows, Starlings, House Sparrows, or Cooper and Sharp-shinned Hawks, *not other hawks* or any of our other birds for which there are permantly closed seasons.

FIG. 114. Heads of two species of Louisiana crows.

FISH CROW. *Corvus ossifragus.* Fig. 114

Fish Crows are fairly abundant permanent residents in the southern part of the state, where they frequent the edges of our marshes and the farm lands of the bayou country. The species was once thought to be restricted to such areas, both here in Louisiana and elsewhere in its range, which extends from the coast of Massachusetts south to Florida and west along the Gulf Coast to Texas. Now, however, it is known to range far inland along many of the larger rivers that empty into the Atlantic Ocean and into the Gulf of Mexico. In our section it is present at least as far north as Shreveport on the Red River and Memphis on the Mississippi River.

Despite the great similarity of the Fish Crow to the Common Crow, there is no known instance of hybridization. As noted in connection with the Common Crow, the call notes are the only means by which the two species are distinguishable with certainty in the field.

The Tit Family: *Paridae*

CAROLINA CHICKADEE. *Parus carolinensis.* Pl. XXVI

The field identification of birds would be simple indeed if all species in uttering their calls or songs pronounced their names. But, unfortunately, all too few are so obliging. The Dickcissel shouts "*dick-ciss-ciss-ciss*"; the Eastern Phoebe says "*phee-be*"; and the Carolina Chickadee moves through the woods uttering repetitiously a cheery, high-pitched, whistled "*chick-a-dee-dee-dee*," or sometimes a simple "*dee-dee-dee.*" This diminutive "ball of feathers" is a member of a rather large family that occurs mainly in the Temperate Zone forests of the New and Old Worlds. In England these birds are called tits, and the Britishers have their Coal Tit, Blue Tit, Great Tit, Bearded Tit, and even their Marsh Tit.

Though resembling many species of tits in other parts of the world, our own Carolina Chickadee is distinctively marked, insofar as Louisiana birds are concerned, by its black cap and black throat on a coat that is otherwise dull gray. It occurs in virtually every patch of woods in the state except for some of the cheniers along the coast that are isolated by wide expanses of marshland. It is so sedentary in habit that no individual probably ever wanders very far from its place of birth. But in winter in the confines of its home district the Carolina Chickadee joins with the Tufted Titmouse, the kinglets, and other small birds to form roving bands. A squeaking noise made with the fingers pressed against the lips elicits great excitement on the part of these flocks and will generally bring the birds to within a few feet of the observer. They nervously search for the source of the sound, which apparently they interpret as a distress call on the part of another bird.

Chickadees build their nests in tree cavities and sometimes in bird boxes. They lay five to eight eggs that are white speckled with reddish brown. The sexes are alike and the young, even in juvenal plumage, closely resemble the adults. This is a general rule among species in which the female is like the male. In those species where the sexes are dissimilar, the young males are usually colored like the females.

TUFTED TITMOUSE. *Parus bicolor.* Pl. XXVI

This species is a close relative of the Carolina Chickadee but differs from it principally in having a plain throat and a topknot or crest. The Tufted Titmouse is a nondescript bird in color, wholly mouse-gray, except for a wash of rufous along the sides and flanks. The song is a distinct *peter-peter*; the call, a *dee-dee* note that resembles one of the utterances of the Carolina Chickadee but is coarser and lower pitched.

The species is a widespread and common permanent resident in Louisiana, wandering through the woods in winter with bands of other small denizens of the forest but apparently never crossing the coastal marshes to the wooded cheniers. It nests in old Downy Woodpecker holes, tree cavities, and even bird boxes when available. The eggs are three to five in number, white or creamy-white, and coarsely and evenly marked with rufous-brown.

The Nuthatch Family:

Sittidae

Nuthatches are small, arboreal birds that spend their lives creeping about on the trunks and limbs of trees in search of bark beetles and other insects. They do not hold their tails against the tree for support, in the fashion of woodpeckers. The little birds nevertheless exhibit great agility in working even upside down on the under parts of branches. Although nuthatches are northern birds in a world-wide sense, Louisiana has two resident species and one that is an erratic, although sometimes abundant, winter visitor. The call notes of all three are nasal in quality and not easily confused with those made by any other bird.

WHITE-BREASTED NUTHATCH. Pl. XXVI; p. 391

Sitta carolinensis.

This species has a black cap; bluish-gray upper parts, with black-and-white edges to the secondaries; and immaculate-white under parts, except for a mixture of rufous on the lower belly and under tail coverts. The other nuthatches are either red breasted or brown headed.

White-breasted Nuthatches inhabit the oak and oak-pine forests of the northern half of our state in considerable numbers, and a few are to be found scattered through the extreme northern part of the Florida Parishes. Their call

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Explanation of *Plate XXVI*

Tits, Nuthatches, and the Brown Creeper

1. Carolina Chickadee (p. 382). **2.** Tufted Titmouse (p. 383). **3.** White-breasted Nuthatch (p. 384). **4.** Red-breasted Nuthatch (p. 385). **5.** Brown Creeper (p. 386). **6.** Brown-headed Nuthatch (p. 385).

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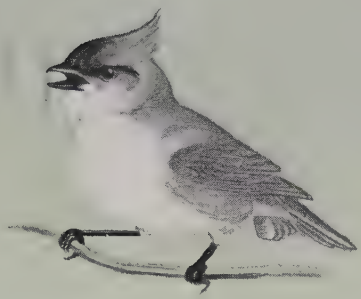

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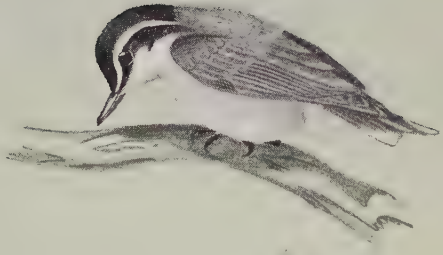

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is a nasal *yank-yank-yank*, but when spring comes the males utter a rather high-pitched *hah-hah-hah-hah-hah* that sounds more like a kind of laughter than a song. The nest is made of feathers and leaves and is placed in a cavity of a tree or stump. The five to eight eggs are white or creamy-white, heavily speckled with rufous or lavender.

RED-BREASTED NUTHATCH. *Sitta canadensis.* Pl. XXVI

This nuthatch is intermediate in size between the other two species that occur in Louisiana. It somewhat resembles the White-breasted Nuthatch in color but has a white line over the eye and a dark line through the eye (shiny black in the male; bluish gray in the female) extending from the bill to the nape. The under parts, exclusive of the white throat, are reddish buff in color. The last character alone makes the species easily recognizable.

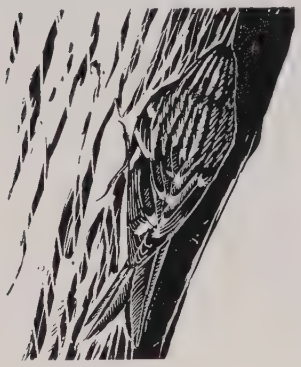
The Red-breasted Nuthatch breeds mainly in the extreme northern part of the United States and in Canada. It is a winter visitor to Louisiana that has been recorded from October 20 to May 20 and is rare except in certain years when it literally inundates the state by mass invasions. In the twenty-five years that I have closely observed the birds of Louisiana this phenomenon has occurred only three times—in the winter of 1940-41 and, to a much lesser extent, in the winters of 1941-42 and 1954-55. In the winter of the great invasion Red-breasted Nuthatches were virtually everywhere, even as far south in the state as the narrow wooded ridges along our coast, on the south side of the great coastal marshes. It seemed strange indeed to see these small birds feeding within a stone's throw of the Gulf beach.

BROWN-HEADED NUTHATCH. *Sitta pusilla.* Pl. XXVI

The Brown-headed Nuthatch is a common permanent resident in many of the pine forests of Louisiana. Indeed, this little nuthatch, the Red-cockaded Woodpecker, Pine Warbler, and Pine-woods Sparrow are the most characteristic birds of the pinelands of the South.

The Brown-headed Nuthatch has gray upper parts and a grayish-white breast, but the *dull brownish cap* immediately identifies it. Its call note is uttered continuously as it scurries about among the boughs of the tall pines in which it lives most of its life. Although definitely nasal in tone, the sound is somewhat more of a twitter than the calls of the other nuthatches. One writer has described it as a thin, metallic *dee-dee-dee* or *tnee-tnee-tnee*. The

nest is usually located in a cavity or old woodpecker hole in a pine snag, generally only a few feet from the ground. The five or six white or creamy-white eggs are heavily marked with cinnamon- or olive-brown.



The Creeper Family:

Certhiidae

BROWN CREEPER. *Certhia familiaris.* Pl. XXVI

The creepers are a small Old World family of only 12 species, one of which, the Brown Creeper, has reached North America. Here it breeds in the northern forests and in the Allegheny and Rocky Mountains, as well as at high elevations all the way down to the southern edge of the Mexican tableland. In Louisiana it occurs solely as a winter resident.

Creepers parallel woodpeckers in certain specializations adapting them to tree climbing. The tail feathers are stiff and attenuated on the tips and are held firmly against the tree trunk as the little birds inch their way upward. After reaching the upper limits of the tree trunk or of one of its main upper forks, the creepers glide down to the base of a nearby tree and begin their ascent all over again. The upper parts are brownish with streaks of dusky and tawny, the rump is pale rufous, and the under parts are grayish white. The thin, rather elongated bill is slightly downcurved.

The Brown Creeper arrives in Louisiana in the first half of October and remains sometimes through early April. The species is regular and generally fairly numerous in northern Louisiana, but in the southern part of the state it is quite uncommon in some winters. The call is a high-pitched *seee* that often provides the first clue to the bird's presence in a wood. Indeed, the little birds blend so well with the bark of tree trunks, to which they cling closely, that they would hardly ever be detected if it were not for our being attracted to them by their almost continuous movements and by their sounds.

The Wren Family:

Troglodytidae

Wrens are small, elusive birds that usually inhabit thickets or heavily wooded areas, where they are more often heard than seen. The family occurs both in the Old and the New Worlds, but the headquarters of the group is in the American tropics. Of the ten kinds that occur in the United States, five are known from Louisiana; but of these only two remain the year around.

Wrens, and some of their close relatives such as the members of the Mimic Thrush family, have only one molt a year, the postnuptial molt following the breeding season. Hence they are in their finest plumage in the early fall, immediately after the molt is completed. Inhabiting, as they do, brushy situations or, in some cases, marshy places with coarse grasses, wrens soon have their feathers abraded. By the time spring comes they are faded and worn, but this poor dress must suffice during courtship, nest building, and family raising. Most other birds, however, have at least a partial prenuptial molt that puts them in fine feather during the period when they are seeking, or being sought after by, the opposite sex.

HOUSE WREN. *Troglodytes aedon.* Pl. XXVII

As its name implies, the House Wren, over a large part of its breeding range, is especially common near human habitations. During its sojourn with us it lacks the sociable nature that it exhibits in summer and instead skulks about in the woods and brushy fields. In Louisiana it is strictly a migrant and winter resident, arriving here in early September and remaining in numbers until April, sparingly until early May. As a winter resident it is uncommon and irregular in north Louisiana but abundant in the southern part of the state.

The House Wren is one of the most nondescript of our wrens, being neither the largest nor the smallest and being simply dark brown above and grayish brown below It has no obvious facial markings, such as a white line

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R.E.Tucker
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color of its back is markedly different from the plain grayish brown of the House Wren and the rich, rusty brown of the Carolina. The distinct white line over the eye quickly distinguishes the Bewick from the House Wren, which has no eyeline at all or at best only a very faint indication of one. In the Carolina Wren the line over the eye is buffy except in faded and worn plumage when it becomes whitish. One of the most diagnostic of all the Bewick Wren's field characters is, however, the manner in which the tail is continually wobbled from side to side as if it were loosely joined to the body.

The species arrives in late September and is usually gone by the middle of March. It is earlier in its departure than either the House Wren or the Winter Wren.

The bird was first described scientifically by John James Audubon on the basis of a specimen obtained by him on October 2, 1821, at the "Oakley Plantation" near St. Francisville. He named the bird for his friend Thomas Bewick.

CAROLINA WREN. *THRYOTHORUS LUDOVICIANUS.* Pl. XXVII; p. 391

This species was first made known to science in 1790 by the famous English ornithologist, John Latham, who based his description on a specimen received by him from "Louisiana" (most likely from near New Orleans), hence the specific name *ludovicianus.* It is one of the commonest resident birds of Louisiana and one of the better known. Its vociferous outbursts, which are unbelievably loud for such a small bird, can be heard in our gardens, as well as throughout the forests of the state. The song suggests the words *tea-kettle, tea-kettle* or *wheedle, wheedle.* Often one of a pair will emit the *tea-kettle* note and be answered nearby by its mate with a monosyllabic rattling sound.

Carolina Wrens build their bulky nests of leaves and sticks in all sorts of places near our houses. Not infrequently they select the most inconvenient kind of situation. This may be an old work hat, which we left in the garage and must now abandon temporarily until the little birds are raised and leave the nest. As I write this account, I have a pair nesting in my outdoor workshop on a small ledge where I keep various instruction booklets on the use and care of the lawnmower and other power tools. I can only hope that none of these booklets has to be consulted in the next few weeks!

The Carolina Wren is the largest of the six species of wrens in Louisiana, among which it is unique in being rich rusty brown above and very buffy below, except for its white throat. There is a light buffy line over the eye that gradually becomes whitish through fading. The five creamy-white eggs have

numerous rufous-brown, cinnamon-brown, and lavender markings, which sometimes form a wreath about the larger end.

LONG-BILLED MARSH WREN. Pl. XXVII; p. 392

Telmatodytes palustris.

The Long-billed Marsh Wren inhabits marshy places almost throughout the country; but for some reason in Louisiana it nests only in our coastal marshes, where, however, it is abundant the year around. Elsewhere in the state it occurs only as an uncommon transient or, in suitable situations, as a fairly common winter visitor. It is not surprising, though, that a large breeding population exists in our southern marshes, for this area provides an ideal habitat for the species. Probably as a result of the isolation of these coastal birds, they have become markedly different in color from populations in the interior of the United States; and for this reason they are recognized as a distinct subspecies or geographical race.

Any wren in tall marsh vegetation is often suspected of being a Long-billed Marsh Wren simply on the basis of its presence in such a habitat; but the light brown color, white eyeline, black cap, and black back marked with longitudinal white stripes serve as the real basis for separation of this species from its relatives. The Short-billed Marsh Wren prefers low, densely matted grassy situations in salt grass marsh or "broom sedge" (*Andropogon*) fields. Moreover, the Short-bill's crown is streaked and not solid black like that of the Long-bill.

Migrants of the present species arrive in late September and do not complete departure for their northern nesting areas until late in April. The resident birds in our southern marshes build their globular nests of coarse grasses and reed stalks and line them with fine grasses, attaching them to reeds or bushes. The entrance hole is on the side, generally near the top. The five to nine eggs are uniform chocolate or else pale brown speckled with olive- or cinnamon-brown. The male is the nest builder and sometimes he is overzealous to the extent that he will construct as many as five (rarely ten) nests, from which the female possibly makes a choice. But the real purpose of the extra or "dummy" nests is not known; they are not complete structures with lining and all, and they are not used as night roosts by the males.

The singing of the male Long-billed Marsh Wren is no less energetic than his nest-building propensities. He gives voice continuously throughout the day to a most pleasing medley of bubbling and gurgling notes that ripple across the marsh.

White-breasted Nuthatch and Young SAMUEL A. GRIMES

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Carolina Wren at Entrance to Nest SAMUEL A. GRIMES

Long-billed Marsh Wren Entering Nest SAMUEL A. GRIMES

SHORT-BILLED MARSH WREN. *CISTOTHORUS PLATENSIS.* Pl. XXVII

This small elusive marsh wren is not particularly a *marsh* bird during its winter sojourn in Louisiana. Indeed, the suggestion has been made that it be called the Sedge Wren. In the upland areas, at least, it its found in dry, grassy fields, especially those with stands of "broom sedge," which the Leconte, Henslow, and Grasshopper Sparrows also frequent. In coastal areas it occurs in grassy marshes. It is not, in other words, a denizen of deep marshes where there are cattails, rushes, and roseau cane.

The Short-billed Marsh Wren is a seldom recorded transient in northern Louisiana, but in the southern part of the state it is known as a common winter resident. The first arrivals appear early in October, and the last individuals to depart do so in late April or early May. The bird's main distinguishing features are its pale buffy color and its small size (only the exceedingly dark Winter Wren is smaller), along with its *finely streaked* crown and back.

All other wrens in Louisiana have the top of the head unstreaked and, while the Long-billed Marsh Wren is marked on the back, the white streaks are boldly conspicuous. The call of the Short-bill is a *chick* note that, once learned, serves readily to identify the species in the grass whether it is seen or not.

THE MIMIC THRUSH FAMILY: *Mimidae*

THE MOCKINGBIRDS and their allies, which include the Catbird and numerous species of thrashers, are confined to the Western Hemisphere. They rank among the world's most accomplished avian songsters, and, since their musical renditions are generally given from some exposed perch, they are familiar to most people. Mockingbirds are closely akin to thrushes, but they possess relatively longer tails and their bills are usually longer and more curved than those

of thrushes. The adults of some species in the family have plain breasts, others streaked or spotted breasts, but the juvenal plumage of nearly all species shows some degree of spottedness.

MOCKINGBIRD. *Mimus polyglottos.* Pl. XXVIII; p. 395

There are few birds anywhere that provide more human enjoyment than does the Mockingbird to the people of the South. The bird's delightful habit of singing day and night, especially when the landscape is bathed in moonlight and fragrant with the odors of summer flowers, makes its song appealing even to the man least sensitive to the sounds of nature. Mockingbirds have a song of their own, but their reputation stems mainly from their ability to imitate other birds. The scientific name, *Mimus polyglottos*, means literally "mimic of many tongues." Some individual mockers are more adept than others. The Massachusetts Audubon Society has issued a phonograph record reproducing the vocal efforts of a single Mockingbird that had over fifty songs in its repertoire, and there is a published report of another Mockingbird that so successfully imitated a dinner bell that it frequently caused the farm hands to come out of the field expecting their noon meal.

There are a few zoologists who contend that Mockingbirds do not mock—that they simply have a diverse assortment of sounds which by sheer chance sometimes duplicate the notes made by other birds. If this were so, we would hear them rendering calls of exotic, extralimital species; but such is not the case. I have never heard a Mockingbird in Louisiana that seemed to imitate any of the purely Mexican birds whose songs I know, nor as a matter of fact any kind of bird or other animal not occurring in the specific mocker's own home range.

The Mockingbird is an abundant permanent resident in Louisiana. Indeed, the adult Mockingbirds that I have ringed and color-banded in my own yard never seem to leave their individual sections of the neighborhood. A male that sings from a perch near the living room windows and regularly visits the feeding table by our breakfast room has never been seen on the other side of the house in the territory of the male that resides there and gets its free meals at a feeding table by our front bedroom windows. For either male to enter the territory of the other would invite combat. These territories, surprisingly enough, seem to be maintained throughout the year.

Though the Mockingbird really needs no description I may briefly state that it is robin-sized, but slimmer, and has long legs and a long black tail,

Mockingbird at Nest ALLAN D. CRUICKSHANK

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Brown Thrasher Surveys Four Hungry Mouths ALLAN D. CRUICKSHANK

Blue-gray Gnatcatcher at Nest SAMUEL A. GRIMES

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The Loggerhead Shrike Sometimes Lays Six Eggs SAMUEL A. GRIMES

the outer feathers of which are white. The bird is gray above and white below, and the wings have a white "window" patch. When the wings are raised, they flash a great deal of black and white. The bird's habit of running across a lawn flitting its wings is a behavior that is not fully understood. Some people claim that it is done to scare up winged insects. Others contend that it is done by an incubating or brooding parent, exercising its cramped wings. And still others would have us believe that it is without any significance whatever. None of these "explanations" appear to me to be wholly correct. I have often seen such performances in the nonbreeding season, and I have witnessed the action on the part of juvenile birds not long out of the nest. Moreover, I have failed to note that the wing flittering achieves any marked success in scaring up insects. Finally, with regard to the claim that it has no significance, I can only say that I doubt if any behavior pattern ever persists without a function, however slight. Thus, here is one of our commonest birds whose behavior is obviously in need of much more careful study—a study that could be made to advantage just outside one's front door.

Mockingbirds raise several broods, beginning nesting activities sometimes as early as February. The nest of sticks and small rootlets, lined with finer materials, contains from three to five greenish-blue eggs, spotted or splotched with cinnamon or rufous. It is usually placed in a dense shrub or hedge and is seldom located far from a human dwelling.

CATBIRD. *Dumetella carolinensis.* Pl. XXVIII

The Catbird, which gets its name from its mewing, catlike call note, is a common summer resident in the northern half of the state but rare at that season in the southern half. I have known of fewer than a half-dozen breeding pairs at Baton Rouge in the twenty years or more that I have lived here. In the seasons of migration, however, notably in April and early May and again in September and October, the Catbird is often abundant throughout the state. In winter it is found only occasionally, hiding away in a dense thicket somewhere in the southern parishes or, still more rarely, lingering in similar situations in north Louisiana.

The song is a jumbled potpourri of notes, remotely resembling those of the Mockingbird. In the breeding season Catbirds come in close to human habitations, with the males singing from exposed perches; but at other seasons the species is shy and retiring. The plumage is a dark slate color above and below, except for the tail and the top of the head, which are black, and the under

tail feathers, which are brick-red. The eye is black, not yellowish as in the Mockingbird and the Brown Thrasher. The Catbird builds its bulky nest of sticks, grasses, and leaves, lined with rootlets, in dense thickets or tangles of vines. The three to five eggs are a rich, waxy greenish blue, unblemished by spots, and thus are more like those of the American Robin than like the eggs of most of the other members of the Catbird's own family.

BROWN THRASHER. *Toxostoma rufum.* Pl. XXVIII; p. 395

No sound in the forest or in the dense shrubbery around our homes is more indicative of fall than the *wheeu* note that the Brown Thrasher begins to make again after its comparative silence in late summer. Although commonly but erroneously called the "brown thrush," this species is actually a "first cousin" of the Mockingbird, which it closely resembles except in color. The songs of the two seem almost identical except to those who know that the thrasher sings in spurts of two or three notes disrupted by slight pauses, whereas the mocker's song is delivered without pause. Neither does the thrasher imitate other birds to any noticeable extent. The color of the upper parts of the Brown Thrasher is a rich brown, that of the under parts buffy, heavily streaked with dusky—not spotted as in the case of our true thrushes.

Brown Thrashers are abundant permanent residents throughout the state, and in winter Louisiana is the home for many northern members of the species that come south to escape the cold weather and to find adequate food. The rather bulky nest of the thrasher is made of sticks and rootlets, lined with finer materials. The three to six eggs are bluish or grayish white, sprinkled with brown or rufous.

SAGE THRASHER. *Oreoscoptes montanus.* Fig. 115

Five individuals of this western, desert species were discovered on January 2, 1926, near the Gulf beach in Cameron Parish. There are no other records for the state. The fact that as many as five Sage Thrashers appeared simultaneously at the same place on the Louisiana coast in midwinter suggests that a small flock of these birds was moving southward from the species' Great Plains breeding grounds in the migratory period of the previous fall and was displaced eastward from a regular route that normally would have carried them into southern Texas or even into Mexico. Morevover, since the birds were found close to the shores of the Gulf of Mexico, it seems apparent that this large body of water had again, as it seems so often to do, imposed a barrier

to further southward movement. In Cameron Parish, where the cheniers are studded with acacia, cacti, and other examples of a more western flora, the habitat is not unattractive to western birds that fortuitously find their way into the region, and hardly a winter goes by that several distinctly western species are not found there.

The Sage Thrasher resembles a short-tailed Mockingbird with a heavily-streaked breast and without prominent white patches in the wings. The white in its tail is confined to spots on the tips of the feathers, while in the Mockingbird the entire outer tail feathers are white.

FIG. 115. Sage Thrasher.

The True Thrush Family: *Turdidae*

When we say the word "thrush," we generally think of a spotted-breasted, brown-backed denizen of dark, shaded woods; and, indeed, most of the thrushes in Louisiana do conform to this pattern. Over the world as a whole, however, a high proportion of the members of the family are without spots as adults and are, like our own Eastern Bluebird and American Robin, inhabitants of open country. It is interesting to note, however, that even the plain-breasted thrushes disclose their relationships by having the breast heavily spotted in the juvenal plumage.

AMERICAN ROBIN. *Turdus migratorius.* Pl. XXVIII

Our robin got its name from the early settlers who were reminded by it of the European Robin or "robin redbreast." Our bird, however, is much larger, and the breast is a rusty-red, rather than a pale orange-red as is the case in the European bird. Because of the great mass migrations that our bird performs, it would have been better if another of its old names, the "migratory thrush," had been retained instead of American Robin.

The species breeds commonly in parts of north Louisiana, notably in the larger towns from Alexandria northward. At Baton Rouge and New Orleans also it is present in summer in small to moderate numbers, the breeding pairs there being restricted to cemeteries or to better residential sections where there are spacious lawns and numerous shade trees. In winter migrants from the North inundate the state, and the species is abundant almost everywhere. It arrives in numbers in mid-October and does not begin to depart until early

March. In the first half of the winter robins are most numerous in the wooded swamps, but by the time January arrives they begin to enter the cities and towns to feed on lawns and golf courses.

The song, which is given mainly on the breeding grounds, is a loud carol made up of short phrases of two or three notes. The call is a *chuck, chuck.*

The robin builds its nest in a variety of situations but most often places it in a tree crotch or on a horizontal limb. The structure is made up of sticks and grasses plastered together with mud and lined with fine, soft materials. The three to five eggs, as one would naturally guess, are "robin's egg blue" in color.

WOOD THRUSH. *Hylocichla mustelina.* Pl. XXVIII

The Wood Thrush is a common summer resident in all parts of the state, except some of the coastal areas. It is found in secluded woods and in residential sections of our cities and towns. The song is a beautiful flutelike carol that is surely one of the most restful sounds to which one can listen, especially when heard in the quiet of the evening between sundown and the passing of twilight. Like most thrushes, the Wood Thrush prefers dense shade; and, although we may hear its song or its sharp call note, *quirk*, we usually have to search for the performer. The bird feeds on insects or on berries and small fruits. The planting of red mulberry trees is a sure means of attracting not only this species but numerous other delightful song birds.

The Wood Thrush is easily distinguished from other thrushes by its reddish-brown head, which contrasts with its olive-brown back, and by the large size of the black spots on its breast. It usually arrives in Louisiana by the last week of March and remains until November. The nest is made of sticks plastered together with mud and almost invariably interspersed with pieces of old newspaper or rags. The three to five eggs are greenish blue and are almost indistinguishable in color from those of the American Robin.

HERMIT THRUSH. *Hylocichla guttata.* Pl. XXVIII

The Hermit Thrush breeds in the great north woods and the high mountain forests of the West and comes to us only after the leaves have begun to fall. It is the only member of its genus that winters regularly and abundantly in the United States; the others go to the tropics, some of them to northern South America or even as far as Argentina and Peru. None of this group of thrushes is well

marked, except the Wood Thrush, which has large black spots on its under parts. If, however, the observer can manage to get a clear view of the Hermit Thrush in fairly good light, it can be separated from its relatives by its reddish-brown tail, which contrasts with an olive-gray or brownish-olive back. All thrushes of this genus have the habit of sometimes nervously flitting the wings and of jerking the tail upward above the horizontal and then slowly lowering it. The Hermit Thrush, however, moves the tail up and down so continually that the behavior is a good field mark.

One of the most delightful experiences I have ever had was that of camping on the top of the Guadalupe Mountains in western Texas, at over 8,000 feet elevation, and hearing the ethereal song of the Hermit Thrush at dawn and again at twilight. Frank M. Chapman says that its notes are not remarkable "for variety or volume, but in purity and sweetness of tone and exquisite modulation they are unequaled."

The species is a common winter resident throughout the state. It arrives in numbers in late October and does not depart until April, while occasionally individuals linger well into May.

OLIVE-BACKED THRUSH. *Hylocichla ustulata.* Pl. XXVIII

This species is a fairly common spring and fall transient through Louisiana. Although occasionally it will appear in early April, normally it is nearly the third week of that month before the species arrives in numbers. The spring passage is usually completed by mid-May. In fall, en route southward, it returns to Louisiana by the middle of September and sometimes lingers until well after the first part of November. The Olive-backed Thrush is not easily separated from either the Hermit or the Gray-cheeked Thrush. From the former it differs in lacking a reddish tail, and from the latter it may be identified by its strongly buff eye ring and its buffy cheeks.

A. A. Saunders, who is a specialist on bird songs, masterfully describes the complicated notes and song pattern of the Olive-backed Thrush as follows: "The song consists of phrases of eight to fourteen or fifteen notes each, all more or less connected and with liquid-consonant sounds between them. The quality is sweet and melodious, but not quite so clear as the Hermit Thrush's, and sometimes somewhat windy. Each phrase begins with a low note, and though all the notes are connected and about equal in time, the ones following this first note seem grouped in pairs. The second note of each pair is lower-

pitched than the first, but each succeeding pair begins on a higher pitch than the last, so that the whole phrase rises regularly in pitch." In the Gray-cheeked Thrush the pitch is more even and the notes seem to be slurred. Both of these species and the Veery as well are not infrequently heard to sing as they pass through the state in spring although sometimes the song is a *soto voce* performance rather than a full-voiced rendition.

GRAY-CHEEKED THRUSH. *Hylocichla minima.* Pl. XXVIII

This species has almost the same habits in Louisiana as the Olive-backed Thrush, but it appears to be slightly less numerous here. It has never been recorded in fall beyond October 24, whereas the Olive-back sometimes remains nearly a month longer. This is not particularly surprising, for even though the winter range of the Olive-back extends much farther south, all the way to Argentina, it also extends farther north, to southern Mexico, much nearer to Louisiana. The Gray-cheeked Thrush spends the winter in Colombia, Ecuador, Peru, Venezuela, and British Guiana. The pale gray cheeks and the *lack of an eye ring* are the best field marks of this species.

VEERY. *Hylocichla fuscescens.* Pl. XXVIII

The Veery is somewhat less difficult to identify than any of the three preceding species, which are all very similar, particularly in the grayish-olive or brownish-olive color of their backs. The Veery, in contrast, is a tawny- or light cinnamon-brown above. The throat is *faintly* spotted with the same color as the back, and the belly and *sides* are conspicuously whitish. The Wood Thrush has the sides heavily spotted, and the other thrushes have these parts more strongly washed with gray or brown.

The Veery, like the Olive-backed and Gray-cheeked Thrushes, is a fairly common transient through Louisiana (April 8 to June 4; September 11 to October 27). It breeds much nearer to us than does either of these species. In the higher mountains of western North Carolina and northern Georgia it is common in summer, and there one can hear its pleasant melody of *whee'o* or *whee'-you* notes that rate it among the most gifted of avian songsters. This vocal performance has a peculiar echoing double quality that makes the bird sound as if it were singing from the bottom of a well.

EASTERN BLUEBIRD. *Sialia sialis.* Pl. XXVIII

Bluebirds do not much remind us of thrushes; their color is not thrush-like; they are birds of the open spaces instead of dark secluded woods; and, unlike any of our other thrushes, they build their nests in a tree or fence cavity or sometimes in a bird house. But the proof that they are members of the True Thrush Family lies in their anatomical characteristics and the fact that the young are spotted like a typical thrush.

The Eastern Bluebird is an abundant permanent resident, particularly numerous in winter, when northern populations come South to escape the cold and to find their staple food of insects. Despite the state-wide abundance of the species in winter, I have a friend who never seems to see one except in spring, whereupon he comes up each year with the exclamation, "Spring must be here; the bluebirds are back!" The truth is that they have never left!

The call of the Eastern Bluebird is a soft, cheery *chur-wee.* The eggs are a pale bluish color, although sometimes they may be nearly white.

As startling as the statement may seem, our bluebird is *not* really blue, but brown! Blue pigment does not exist in feathers. Birds have pigments that are actually red, yellow, and a variety of other colors, but not blue. Hence, technically there is no such thing as an Eastern *Blue*bird, a *Blue* Jay, or a Great *Blue* Heron. We perceive blue color in these birds simply because the minute mechanical structures in the feathers break up white light striking them at an angle and refract certain components that yield blue color. This fact can be convincingly verified by viewing a blue feather through a microscope admitting only transmitted light from the stage mirror. We then see only a dense brown color. Another way is to look at an Eastern Bluebird or Blue Jay while looking as nearly toward the sun as possible. Neither bird is then blue but is instead black. A Cardinal in the same position is red, and a Yellow Warbler is yellow, since red and yellow pigments are actually present. To perceive them we do not have to depend on a particular angle of reflected light.

Explanation of *Plate XXVIII*

Mimic Thrushes and True Thrushes

1. Mockingbird (p. 394). **2.** Catbird (p. 397). **3.** Brown Thrasher (p. 398). **4.** American Robin (p. 400) **5.** male Eastern Bluebird (p. 404). **6.** Wood Thrush (p. 401). **7.** Hermit Thrush (p. 401). **8.** Veery (p. 403). **9.** Gray-cheeked Thrush (p. 403). **10.** Olive-backed Thrush (p. 402).

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WHEATEAR. *Oenanthe oenanthe.* Fig. 116

A single Wheatear captured near New Orleans on September 12, 1888, supplies the only record for this species in Louisiana and, as a matter of fact, one of the few records for the bird anywhere in the United States. The specimen, taken by Professor George Beyer, proved to be identical with examples

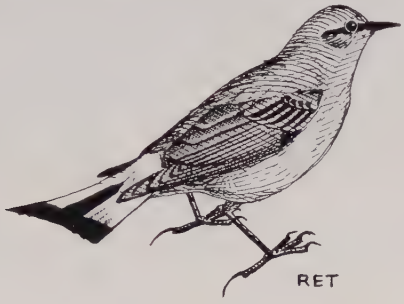

Fig. 116. Wheatear.

of the population of the species that breeds in Iceland and Greenland, west to Ellesmere Land, in our North American Arctic Zone. Wheatears of this general region normally migrate through England and France to winter in West Africa, and, in order for one to appear in Louisiana, an occasional bird must go astray.

The Wheatear is about the size of an Eastern Bluebird, but it possesses a striking color pattern—upper parts light gray; cheeks and wings black; the rump and basal two-thirds of the tail white with the end black, tipped with buffy; under parts buffy. As it flits over open ground it bobs and jerks its tail and utters a sharp *chack.*

The Old World Warbler Family: *Sylviidae*

This diverse family comprises over 300 species, but of these only 15 occur in the Western Hemisphere—two kinglets, two Willow Warblers and a Grasshopper Warbler (in Alaska only) and 10 gnatcatchers (which perhaps are not properly classified in this family at all). The hundreds of remaining

species are confined to the Eastern Hemisphere. Sylviids are in many ways the counterpart of our own large family of warblers, the Parulidae, which in turn fail entirely to reach the Old World. The virtually complete mutual exclusion of each of these families from the range of the other provides good argument for zoogeographers who wish to consider the Palearctic Realm (including Europe, North Africa, and that part of Asia west of the Indus River and north of the Himalayas) separate from the Nearctic Realm (North America south to the edge of the Mexican Plateau). The continental faunas of these two realms are, to be sure, in many ways similar—so much so that they all might be considered as parts of a single circumpolar zoogeographical realm, the Holoarctic. But the peculiarities of the several families characteristic of each are striking, as in the case of the families Sylviidae and Parulidae, not to mention the contrast of the Old World Flycatchers (Muscicapidae) versus the Tyrant Flycatchers (Tyrannidae), or the Old World Orioles (Oriolidae) versus our own peculiar family of orioles and blackbirds (Icteridae).

As noted above, the gnatcatchers are of uncertain systematic position. Until recently most ornithologists regarded them as aberrant members of the family Sylviidae; but now they are considered by certain authorities to be members of the Muscicapidae, the Old World Flycatchers. As such, they would become the only New World representative of that large and diverse group of birds, which ranges throughout Europe, Asia, and Africa but which has been eminently unsuccessful in reaching the Western Hemisphere.

BLUE-GRAY GNATCATCHER. *Polioptila caerulea.* Pl. XXIX; p. 396

This diminutive bird, whose body is not much larger than a thimble, is bluish gray in color, as the name states. Its long tail, though, is black except for the outer feathers, which are white. Adult males have a thin black line over each eye, the lines joining at the base of the bill. The Blue-gray Gnatcatcher has been described as a miniature replica of the Mockingbird. This characterization is, however, not precisely correct, for the Mockingbird is not nearly so bluish gray in color, lacks the black lines on the head, and, of course, differs in various other respects. Nevertheless, one cannot look at a Blue-gray Gnatcatcher without being reminded of this striking superficial resemblance.

The species is a common summer resident from early March to late October throughout Louisiana, particularly where there are oak trees. It deserts north Louisiana in late fall and does not return until the following spring; but in the southern part of the state a few can be found in winter on nearly any day one spends in the field.

The nest is a beautifully fabricated structure that is covered with lichens and placed astride a horizontal limb, with which it blends so perfectly that it is almost impossible to locate unless one follows the bird to it (see photograph on page 396). The four or five bluish-white eggs are thickly spotted with cinnamon-brown or umber.

GOLDEN-CROWNED KINGLET. *Regulus satrapa.* Pl. XXIX

This and the following species are among the smallest birds in North America. Both breed in the far northern woods, visiting us only in winter. The Golden-crowned Kinglet is greenish above and grayish white below and can be distinguished easily from the following species by the white line over the eye, bordered above by black. The males have the center of the crown golden-orange, surrounded by yellow; the females possess only yellow in the crown. Two very closely related species occur in Europe, where they are called the Firecrest and the Goldcrest.

The note of the Golden-crowned Kinglet is a high-pitched, almost supersonic, *ti-ti.* Indeed, there are many people who cannot hear it at all. Unless I consciously listen for it, I likewise do not always hear it.

The species is rather consistently common in winter in north Louisiana, but in some years it is rare in the lower half of the state. The first arrivals reach us in mid-October, and by the middle of April the species is usually gone. Kinglets travel through the forest in small bands, generally in close proximity to a group of chickadees, titmice, or other small denizens of our winter woodlands.

RUBY-CROWNED KINGLET. *Regulus calendula.* Pl. XXIX

The Ruby-crowned Kinglet is almost ubiquitous in Louisiana in winter. In our 49,000 square miles of land there must be, on the average, at least one to every twenty-five acres. This is surely a conservative estimate and indicates a winter population in Louisiana of over one million Ruby-crowned Kinglets. And since each of these tiny sprites spends nearly its entire time catching and eating minute insects one after another, just think of the billions that all of them consume each day!

The Ruby-crowned Kinglet differs from the Golden-crowned mainly in the color of the crest. In the male the crest is a brilliant red (lacking in the female), but, unfortunately, except when the bird is alarmed, or in spring just

before it heads northward, the crest is kept concealed. The conspicuous white *eye ring* is diagnostic, since the Golden-crowned Kinglet has a *white line* over the eye, bordered above with black. The present species arrives as early as late September and sometimes lingers until early May. The song is a jumbled, repetitious series of soft, pleasing sounds that are seldom heard this far south except in spring just before the birds start northward. The call note, however, is a chatter or grating sound that is an excellent aid to field identification.

The Wagtail Family: *Motacillidae*

The Wagtail family, like the two preceding families, is predominantly Old World in distribution. Only two species, both of which are called pipits, occur in the United States, and one of them is but a geographical variant of a species that is found across northern Europe and Asia. The pipits are birds of open short-grass fields and lake shores. Instead of hopping over the ground, like most small birds, they walk; and in doing so they constantly bob the tail up and down. The outer tail feathers are white and are conspicuously flashed when the flocks arise to take flight. In the latter regard, as well as in several other features of their superficial appearance, they somewhat resemble the Vesper Sparrow and the longspurs, but their habits of walking and of wagging their tails are diagnostic.

WATER PIPIT. *Anthus spinoletta.* Fig. 117

The Water Pipit is one of our commonest winter birds. It arrives in the state in October, and from the first of November until late March it is abundant in almost every place where there is open ground. Favorite haunts are golf courses, plowed fields, levees, air strips, or any other open expanse, such as a lake shore, the Gulf beach, a spoil bank through the coastal marsh, or even the edges of our heavily-traveled highways. All these habitats are in sharp contrast to its preferences in summer when it retreats to the Arctic Zone and to alpine situations above tree line on the high peaks of the Rockies.

In winter the species goes in flocks numbering from a few individuals up to 50 or more, and when alarmed into flight the whole group ascends, usually circling widely in a series of bounding undulations, only to come back near to its point of departure. The Water Pipit has a weak but distinctive note, a simple *wit-wit* or *wit-wit-wit-wit*, which, once learned, serves to identify it as it flies overhead, whether or not the bird is actually seen. It is a plainly-colored, brownish species, with streaked, buffy under parts, that is quite non-descript and is thus similar to some of the sparrows and longspurs. But the combination of its white outer tail feathers, thin bill, slender form, bobbing tail, peculiar call notes, and habit of walking instead of hopping, separates it from everything else with which it can be confused—except the Sprague Pipit, which is discussed in the following account.

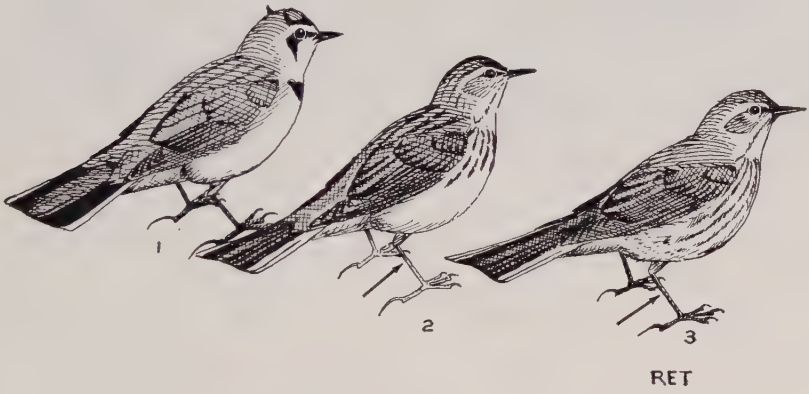

Fig. 117. (1) Horned Lark; (2) Sprague Pipit; (3) Water Pipit.

SPRAGUE PIPIT. *Anthus spragueii.* Fig. 117

This species of pipit is rather rare in Louisiana, except in certain localities in the western part of the state. On the prairies in Cameron Parish it is noted with fair regularity, and it is not infrequently observed near Shreveport. It differs from the Water Pipit in its slightly smaller size, its yellow instead of dusky-colored legs, its paler but streaked instead of plain upper parts, and its white or only slightly buffy under parts, which are faintly streaked on the upper breast but not elsewhere. Unlike the preceding species, it seldom wags its tail. The call is a hard, sharply enunciated *cleep*, frequently doubled, occasionally tripled, and totally unlike the note given by the Water Pipit.

The present species sometimes arrives in Louisiana in September but ordinarily is not seen until October. Occasionally one will linger until the last week of April. Grassy areas, such as pastures and airfields, are its preferred habitat. It seldom occurs in flocks, like the Water Pipit, being more frequently encountered singly or in pairs.

The Waxwing Family: *Bombycillidae*

CEDAR WAXWING. *Bombycilla cedrorum.* Pl. XXIX

In no part of the world is there what we might term a "slicker, trimmer" bird than the "cedarbird." It is about the size of an Eastern Bluebird, and its general color is a rich cinnamon-brown. The belly and a band across the end of the tail are yellow. The forehead, the chin, and a line through the eye are a velvety black. The secondaries have tiny, seedlike structures on their tips that look exactly like solidified drops of bright red sealing wax. The function of these peculiar structures, if they have any function, is unknown. But, the thing that really lends distinction to the waxwing is its long crest or topknot.

These elegant birds have been seen in Louisiana as early in the fall as late September, but not until late November or December do they appear in numbers and it is often mid-January before they are abundant. By the end of March they virtually inundate the entire state, but nowhere are they more numerous than in our cities, where they come to eat the ripe camphor and ligustrum berries. The flocks fly in compact groups from one food tree to another, wheeling and turning in unison and all the while uttering a high-pitched, lisping note. When a flock alights to rest in the top of a tree, the crests are held erect and all the birds generally face the same way.

Sometimes Cedar Waxwings eat so many berries at a time that digestion must be accomplished rapidly in order to make room for the continuous intake into the esophagus and stomach. Occasionally a bird is found prostrate on the ground, seemingly "drunk" from having consumed too much berry juice. But I am inclined to think that another explanation is more plausible. These stupefied birds always have their throats packed beyond capacity with berries or fruit, which surely must exert undue pressure on the adjacent blood vessels. It is entirely possible that the pressure against the internal carotid artery, which carries blood to the brain, causes a temporary "black-out" until digestive action allows some of the food in the esophagus to move down into the stomach and thereby relieve the congestion.

The Shrike Family: *Laniidae*

LOGGERHEAD SHRIKE. *LANIUS LUDOVICIANUS.* Pl. XXIX; p. 396

The terms "butcher bird," "French mockingbird," or "catbird" instead of Loggerhead Shrike would probably be more often recognized in Louisiana as the name for this species. It is an abundant and conspicuous bird that is nowhere more likely to be seen than on a telephone wire. The bill is sharply hooked and possesses a supplementary "tooth," rendering it especially useful for tearing apart the insects, small mammals, and sometimes sparrow-sized birds that the shrike is able to catch. The feet, on the other hand, are weak and nonraptorial. Consequently there has arisen a most peculiar behavior on the part of the species. It impales its prey on a thorn and proceeds to dismember it without the need for talons. A modern innovation is for the shrike to hook its prey on a barbed-wire fence.

The breeding shrike population in Louisiana is probably entirely sedentary, but elsewhere the bird must be at least partially migratory, for we get an occasional large, pale, white-rumped individual here in winter that is typical of

the breeding populations of the Great Plains Region. Shrikes are modestly attired, gray above and white below, with a broad black line through the eye and with the wings and tail largely black. The outer tail feathers are broadly tipped with white and the wing has a small white patch in the secondaries. Beginners sometimes confuse the shrike with the Mockingbird, but the massive head of the shrike, its black facial markings, and its black wings and tail are excellent points of difference. Also, the shrike has a shorter tail than does the Mockingbird. When it flies from the top of one tree to the top of another, it nearly always swoops low to the ground—a performance which the French call the "*révérance*," or the "curtsy." The Mockingbird's flight is straightaway on the level.

Shrikes have a variety of querulous, rather nonmusical notes, one of which has a mewing quality that accounts for the name "catbird." The nest is a bulky structure made up of moderately large sticks on the outside and fine grasses on the inside. It is placed in a thorny hedge or low tree, usually seven to ten feet above the ground. The three to six eggs are dull creamy-white, heavily blotched with brown or lavender. The young are essentially like the adults in color except for a series of fine vermiculations on the breast.

Shrikes are members of a family that is abundantly represented by species in the Old World. Only two species, however, the Loggerhead and the Northern Shrikes, inhabit the Western Hemisphere.

The Starling Family:

Sturnidae

STARLING. *Sturnus vulgaris.* Fig. 118

It was a sad day in the history of this country when back in 1890 a group of 60 Starlings was introduced into New York City from Europe. It was from this shipment, and another of 40 liberated a year later, that the millions

of Starlings now inhabiting the United States and Canada apparently have descended. The food habits of the Starling are beneficial, for it feeds almost entirely on insects that it gets from the ground; but, unfortunately, it roosts and nests on the cornices of our buildings, which it literally "whitewashes" with its droppings. In Washington, D.C., alone it causes hundreds of thousands of dollars' damages each year in this regard, not to mention that it ruins the paint on cars parked under trees where it roosts.

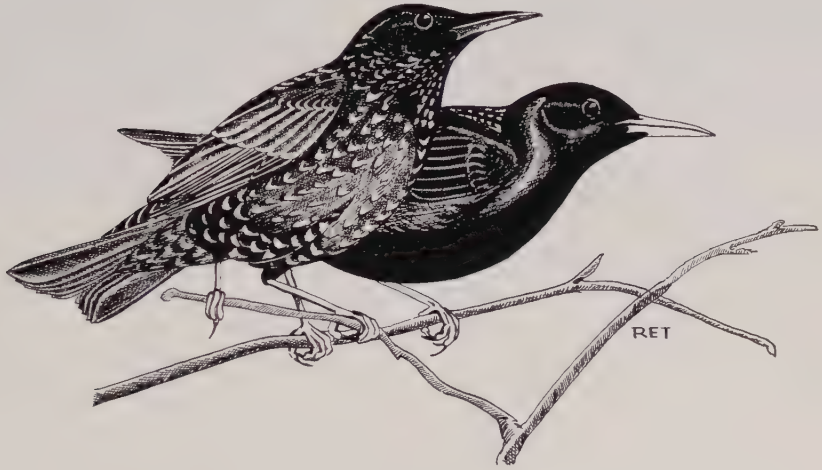

FIG. 118. Starling: unworn fall plumage on left; worn spring plumage on right.

The Starling lays its four or five pale bluish or greenish-white eggs in tree cavities and nesting boxes. This leads to one of the worst indictments against it—the fact that it drives away native songbirds and usurps the nesting cavities of such birds as the Red-headed Woodpecker. This beautiful woodpecker is now near extirpation in some sections of the eastern United States, and right here in Louisiana it is becoming alarmingly scarce in certain areas. For instance, at Baton Rouge, several dead snags in City Park Lake and New University Lake, which for years produced brood after brood of Red-headed Woodpeckers, are now completely taken over by Starlings, and the woodpecker has disappeared from the neighborhood. Ironically, the latter, amply equipped by nature to drill and excavate its own nest cavity, does so only to be harassed and heckled into abandoning it to the overbearing Starling, which itself is incapable of making the hole. Naturally, if any bird fails to breed

and to produce a complement of young each year, it cannot offset the inroads of its natural enemies and the other decimating factors operating against it. Consequently, a species such as the Red-headed Woodpecker can in a very few years disappear from a wide area of its range. Unfortunately there is nothing much that man can do about the ever-increasing Starling. It is here to stay, and our only hope is that some disease or parasite peculiar to the species will intervene in our behalf.

The Starling was rare in Louisiana until the winters of 1930-31 and 1931-32, when several small flocks were seen. Then, in the winter of 1932-33, great hordes of them arrived. Thousands of individuals covered the parade ground on the Louisiana State University campus and similar situations elsewhere. Each winter thereafter larger and larger flocks appeared, but at first they would disappear in early spring. As late as 1937 there were but very few records of nesting and then only of isolated pairs. Finally, in the summer of 1938, a sizable number bred in downtown Baton Rouge and in the vicinity of the University. Since then the summer population has increased steadily until now Starlings are seen in numbers throughout the year in nearly every town in the state.

The Starling is not an unattractive bird. In breeding plumage the males and females alike are glossy black with metallic purple and green reflecting from their bodies in good light. In the nesting season, the bill turns bright yellow, and the legs are a dull red. In fresh fall plumage the bird appears grayish at a distance because each feather is tipped with grayish white or buffy, and it is only by the wearing off of these light tips that the bird assumes its black, iridescent appearance. The juvenal plumage, in which the young leave the nest, is dull brownish, totally unlike that of the parents. But this dress is lost by a postjuvenal molt in September that puts the young birds in their first winter plumage, which is indistinguishable from that of the older birds. The Starling walks insteads of hops, and unlike the blackbirds, which it resembles, it has a bill that is not robust or conical but long and rather flat. The tail is relatively short, giving the bird the shape of an Eastern Meadowlark. When in flight it frequently glides on outstretched wings. Starlings have a series of musical whistles and still other notes that are coarse and rattling. A frequently uttered sound is something suggesting the syllables *p-e-e-u-u*. Starlings are accomplished mimics, frequently imitating the call of the Bobwhite.

The family is fairly well distributed through Europe, Asia, and Africa. Although absent from Australia and New Guinea, it is represented in the Philippines and on many of the islands of the southwest Pacific.

The Vireo Family:

Vireonidae

Vireos are endemic to the New World; that is, they are found nowhere else. They reside mainly in wooded regions, although a few species prefer low, brushy areas. They resemble Wood Warblers (Parulidae), but are more deliberate in their movements and their songs are generally less musical and less complicated. Structurally the vireos are in some respects intermediate between the shrikes and the Wood Warblers, having, as they do, slightly hooked instead of pointed bills and heads that are rather large like those of the shrikes. Their plumages are for the most part drab and unspectacular, whereas those of the Wood Warblers are usually well marked and in many instances resplendent.

WHITE-EYED VIREO. *Vireo griseus.* Pl. XXIX; p. 429

This is one of our most abundant birds in summer, when it is present in nearly every thicket in the state, from the coastal ridges to the border of Arkansas. It is yellowish green above and white below, except for the flanks, which are yellow, and there are two very distinct creamy-white wing bars. There is a prominent yellow ring around the eye, and the line from the eye to the bill is yellow, two points that clearly separate it from the somewhat similar Bell Vireo (see next account). The iris in the adult is white, as the name implies, but in young birds it is brown. The song is a complicated jumble of notes that in some renditions suggests the words "chip-fell-off-the-white-oak."

White-eyed Vireos build their pensile nests in bushes, usually in some dense growth. The three to five eggs are white with tiny specks of black or brown. A few of these birds are nearly always to be found in southern Louisiana in winter, but they are never common until the spring migrants begin to arrive in numbers in mid-March. From that time until late October the species is encountered frequently.

BELL VIREO. *Vireo bellii.* Pl. XXIX

The Bell Vireo is extremely rare in Louisiana, except in the extreme northwestern part of the state, where painstaking search by Horace H. Jeter of Shreveport has resulted in the discovery of quite a few breeding pairs. Jeter found the species in a habitat of willow and shrubs in the bottom lands of the Red River. Nowhere else in Louisiana is it known with certainty to breed, and there are but a few records of it in migration. It has been seen as early as March 31 and as late as September 11, with isolated records in November and December. A single Bell Vireo that I collected in the salt cedars (*Tamarix*) near the Gulf beach in southwestern Louisiana on December 29, 1952, is, I believe, the only wintering individual ever found in the United States.

The Bell Vireo is a nondescript little bird, resembling the White-eyed Vireo but having dark-colored eyes. Instead of possessing a yellow eye ring and yellow lores, it has only a faint, white line, which extends around the top of the eye and thence to the bill. The flanks, although not nearly as yellow as those of the White-eyed Vireo, are nevertheless lightly washed with that color. Its white wing bars separate it from the Warbling Vireo, which it also resembles. Peterson describes the song as a *cheedle, cheedle, chee? cheedle, cheedle, chew*!

Although Jeter found the Bell Vireo spending the better part of its time in willow trees, its hanging, cup-shaped nest was in his experience always suspended between two horizontal limbs of another plant. Six out of the seven nests he found were between three and five feet above the ground, three being in the marsh-elder (*Baccharis*) and one each in the blackhaw (*Viburnum*), sumac (*Rhus*), and persimmon (*Diospyros*). The seventh nest was at a height of twelve feet or so in a cottonwood (*Populus*). The contents of five of the seven nests were examined. Three contained complete clutches of four vireo

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Explanation of *Plate XXIX*

Vireos and Some of Their Allies

1. Solitary Vireo (p. 417). **2.** Yellow-throated Vireo (p. 417). **3.** White-eyed Vireo (p. 415). **4.** Red-eyed Vireo (p. 418). **5.** Warbling Vireo (p. 419). **6.** Philadelphia Vireo (p. 418). **7.** Bell Vireo (p. 416). **8.** Cedar Waxwing (p. 410). **9.** Loggerhead Shrike (p. 411). **10.** Blue-gray Gnatcatcher (p. 406). **11.** Golden-crowned Kinglet (p. 407), male in foreground, female behind. **12.** male Ruby-crowned Kinglet (p. 407).

Robert E Tucker

eggs; two contained clutches of three vireo eggs plus one Brown-headed Cowbird egg, and both of these nests were abandoned. The eggs are practically indistinguishable from those of the White-eyed Vireo.

YELLOW-THROATED VIREO. *Vireo flavifrons.* Pl. XXIX

This vireo is a common summer resident throughout the part of Louisiana lying north of the coastal marshes. It normally arrives in the second week of March and remains until late in October. The song is a simple but pleasant-sounding phrase, "sweetie, come here!" It is repeated over and over, but not nearly so frequently as the notes of the Red-eyed Vireo, which are similar. The greenish-yellow head and back and *bright yellow throat and breast*, which contrast with the white belly, distinguish this species from other vireos at a glance. In addition it has a conspicuous yellow eye ring and yellow lores, along with the prominent white wing bars. The Philadelphia Vireo, which lacks wing bars, is yellow below, but the shade of yellow is radically different, being not nearly so intense, and the top of the head is gray bordered with a white eyeline.

SOLITARY VIREO. *Vireo solitarius.* Pl. XXIX

The Solitary Vireo (also called the Blue-headed Vireo) is a northern species that occurs in Louisiana only as a winter resident. Aside from an anomalous August record and a few scattered records in September, its appearance in fall is in early October, and the latest date in spring is May 4. Although this vireo is encountered almost anywhere in the wooded sections of the state in winter, it is particularly common at that season in the Florida Parishes. When alarmed, it gives a scolding *churrr* that helps one locate it as it moves deliberately through the treetops or occasionally through a low myrtle thicket.

The species is easily identified by the contrast between its bluish-gray head and its green back, by its conspicuous white eye ring and white lores, and by its immaculate-white throat, breast, and belly. There is a wash of yellow or yellowish green on the sides and flanks. It has two white wing bars, but these are of little need as field marks, since the other plumage characteristics are more diagnostic.

RED-EYED VIREO. *Vireo olivaceus.* Pl. XXIX

This abundant summer resident is to be found virtually everywhere in the hardwood section of the state, arriving in the last half of March and staying until the last of October. On some days during the main periods of migration, in April and again in September and early October, the woods seem literally filled with Red-eyed Vireos. No less than a hundred can often be counted in the confines of a few acres. In spring and early summer the song of the Red-eye is heard from dawn to late afternoon, being repeated over and over again, sometimes with hardly any pause. To me it sounds as if the bird is saying, "Here I am. Where are you?"

In addition to having a distinctive song, the species is also recognized by the bluish gray on top of the head, bordered on each side by a black line beneath which a broad white line extends *over the eye* down to the bill. There are *no wing bars* and the under parts are almost pure white. The red eye cannot be seen in the field and is therefore of no value as an aid in field identification.

The small pensile nest is suspended in a fork anywhere from five to forty feet up, usually in an oak or sweetgum tree. The three or four eggs are white except for a few tiny blackish spots around the larger end.

PHILADELPHIA VIREO. *Vireo philadelphicus.* Pl. XXIX

Some ornithologists have expressed concern because the Philadelphia Vireo is quite rare in Philadelphia and for this reason think the name should be changed; but all this seems to me to be a matter of small moment. After all, a name is just a name, and this one commemorates an interesting bit of history, for this bird remained unknown to science until as late as 1851, when the famous naturalist John Cassin secured the first specimen in one of the most populous sections of the country, at Philadelphia.

With us the Philadelphia Vireo is a rare spring, but very common fall, transient. It appears infrequently in late April and May, along with the waves of warblers that arrive in Louisiana at that time; but by the last week of August it returns in numbers and can be seen almost daily through the third week of October, at least in the southern sections of the state. I have found it nowhere more numerous than in the willows along the Mississippi River near Baton Rouge.

The Philadelphia Vireo has a faint white eye stripe but no wing bars, and it is grayish green above except for the top of the head, which is gray.

Below it is mostly very pale yellow. Both the Philadelphia Vireo and some fall examples of the Warbling Vireo are yellow and white below; but in the Philadelphia the yellow is overwhelmingly predominant, being particularly evident on the chest, whereas in the Warbling Vireo the white predominates and the chest is never yellow. The Yellow-throated Vireo has the throat and breast intensely yellow, and, in addition, possesses a prominent yellow eye ring and white wing bars.

WARBLING VIREO. *Vireo gilvus.* Pl. XXIX

The Warbling Vireo is the plainest member of the genus in Louisiana. Most examples are simply greenish gray above and white below with no other markings except a white line over the eye; there are no wing bars. Most Warbling Vireos show a wash of yellow on the flanks but never approach the Philadelphia Vireo in the yellowness of the under parts. The Red-eyed Vireo is descriptively similar to the Warbling Vireo, but in life the two are quite distinct, since the Red-eye is somewhat larger and has the white eye stripe bordered above by black.

The favorite haunts of the Warbling Vireo are large trees along the banks of a river or a lake. It is particularly fond of cottonwood trees, although oaks and pecans are also frequented. The nest is pensile, like those of other vireos, and is located from ten to forty feet above the ground. The eggs are similar to those of the Red-eyed Vireo but smaller.

The song bears little or no resemblance to the songs of the other vireos. It consists of a jumble of warbling notes with a slight rising inflection toward the end. Although the refrain is not wholly displeasing to hear, I find it sometimes annoying, possibly because it lacks a smooth pattern and also because it is repeated so persistently and without pause or variation throughout the day.

The species usually arrives in Louisiana in March but is not common until the first days of April. It departs rather soon after its nesting season, although an occasional individual may be seen as late as September or early October.

The Wood Warbler Family:

Parulidae

This family is primarily North American, being entirely absent from the Old World, where it is replaced by the vast array of species making up the family Sylviidae. The Parulidae have been described as the "butterflies of the bird kingdom," in tribute to their diverse and spectacular color patterns. All except one of the 41 species that occur regularly in the eastern half of the United States also occur in Louisiana at one season or another. Fourteen species are definitely known to nest here, and two others almost certainly do so, although their nests have not yet been found. Many of the warblers are merely birds of passage, stopping here only en route to and from their breeding grounds in the north and their winter homes in the tropics. But in the brief period of their migration, warblers of both categories may be unbelievably numerous, particularly in spring on our coastal islands and cheniers, where they

Explanation of *Plate XXX*

Wood Warblers

(Spring plumage unless otherwise specified; when only one bird of a species is shown, the sexes are quite similar)

1. male Black-and-White Warbler (p. 421); **1a.** female. **2.** male Black-polled Warbler (p. 441); **2a.** female. **3.** male Black-throated Gray Warbler (p. 437); **3a.** female. **4.** male Golden-winged Warbler (p. 425). **5.** male Myrtle Warbler (p. 435) in late spring and summer plumage; **5a.** male in winter plumage. **6.** male Audubon Warbler (p. 436) in winter plumage. **7.** male Black-throated Blue Warbler (p. 434); **7a.** female. **8.** Yellow-throated Warbler (p. 439). **9.** male Canada Warbler (p. 453); **9a.** female. **10.** male Mourning Warbler (p. 449); **10a.** female. **11.** male Connecticut Warbler (p. 449); **11a.** female. **12.** Nashville Warbler (p. 431). **13.** male Hooded Warbler (p. 452); **13a.** female. **14.** male Bachman Warbler (p. 426); **14a.** female. **15.** male Kentucky Warbler (p. 446). **16.** male Black-capped Warbler (p. 452); **16a.** female. **17.** male Pine Warbler (p. 442). **17a.** female. **18.** male Prairie Warbler (p. 443); **18a.** female. **19.** male Cape May Warbler (p. 434); **19a.** female. **20.** male Magnolia Warbler (p. 433); **20a.** immature in fall. **21.** Louisiana Waterthrush (p. 446). **22.** Northern Waterthrush (p. 445). **23.** Ovenbird (p. 444). **24.** Swainson Warbler (p. 423). **25.** Worm-eating Warbler (p. 424).

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have just made a landfall after crossing the Gulf of Mexico. I have seen every tree and every bush in such places filled with warblers of dozens of species, and what a spectacle that is! The uninitiated would suppose that a storm had blown a host of *tropical* birds to our shores, not realizing that many of these gems of color nest in the trees of their yards or in some nearby wood.

The ability to find and identify the members of this family of birds poses a challenge to the would-be ornithologist. It would not be an easy task if we were confronted only with the spring plumages of the males, but there is the compounded difficulty of having to learn to recognize the females and the less well-marked fall plumages of the adults, both male and female, as well as the different-appearing young of the year, where again the sexes may be dissimilar. Careful study and observation are essential if one is to learn them all, both as to sex and age, as well as to season. Yet this is precisely what makes ornithology the intriguing subject that it is. It is laden with unlimited potentialities for providing one with an unending source of pleasure and fascination, as well as wholesome outdoor exercise and recreation.

The Wood Warblers are extremely active little birds that seem continuously on the move in search of their food, which consists almost wholly of insects. They must find a tremendous number of tiny leafhoppers, plant lice, and other minute animals in order to fill their dietary requirements and thereby produce the energy to carry on their high rate of metabolism. In this quest they employ the technique of "rapid peering," as Joseph Grinnell once termed their habit of moving quickly one way and then another in order better to see as much surface area as possible from many angles. The system is much the same as the one we employ when we search the ground for a lost object, such as a golf ball. We rapidly zigzag back and forth, quickly looking one way then another. The lost object may then suddenly appear in plain sight before us when viewed from one particular angle. The warblers similarly, it would seem, detect their quarry, which might otherwise escape notice amid the leaves or in the cracks and crevices of a tree trunk. But whatever the device used by the energetic little birds they seem continually to be picking up objects in their small, pointed bills.

BLACK-AND-WHITE WARBLER. *Mniotilta varia.* Pl. XXX

The Black-and-White Warbler is just what its name suggests, a small bird that is streaked with black and white all over. The great early naturalists, John James Audubon and Alexander Wilson, called it the "black and white creeper," thereby alluding to its habit of snooping around all sides of a limb in its search

for insects. Sometimes it works upside down on the under side of a bough, creeping one way and then another. Its distinctive black and white pattern renders it easily identifiable. The somewhat similar-appearing Black-polled Warbler has a solid black cap (no white center stripe) and white cheek patches. The Black-throated Gray Warbler, a rare western visitor, likewise has a solid black cap and has an almost solid gray back. A small streaked black and white bird that creeps all over the limbs of a tree, poking its head around the under side of branches, is almost certain to be the Black-and-White Warbler. The song is an extremely high pitched *we-see* rapidly repeated four or five times.

The species is a common transient everywhere in the state and a fairly common summer resident in the oak forests in the northern two-thirds of the state. It arrives very early from its winter home, appearing sometimes in late February, and is largely gone by November, although a few sometimes remain throughout the winter in southern Louisiana. The four or five speckled eggs are laid in a nest that is usually placed on the ground at the base of a tree and is well concealed above by an arch of leaves or pine needles. Occasionally the nest is placed in a broken-off stump.

PROTHONOTARY WARBLER. *PROTONOTARIA CITREA.* Pl. XXXI

Beginners in bird study often look with disfavor on the name of this bird; they find it difficult to spell, to pronounce, and to understand. Actually, however, the title Prothonotary (pronounced pro-thon'-o-ta-ry) possesses the same high degree of distinction and appropriateness that we recognize in the name of the Cardinal. For centuries of ecclesiastical history, the prothonotary, who is legal advisor to the pope, has worn yellow vestments, as the cardinals have worn red. When the Creoles of Louisiana found in the swamps of our state a bird that wore a similarly resplendent golden surplice, they had the inspiration to call it the "prothonotary"—or, at least, so the story goes. At any rate, the Prothonotary Warbler has ever since occupied its fitting position in the world of southern swamp birds as a properly sanctified associate of the Cardinal. How colorless and unimaginative in comparison is the name Golden Swamp Warbler, which some people would like to use in place of Prothonotary! It tells us nothing we do not already know the moment we see the bird; and, while it is perhaps desirable that many names should be of this purely descriptive sort, it is certainly refreshing to find an occasional one that widens our horizons by providing a challenge to our intellectual curiosity.

The species is everywhere in Louisiana an abundant denizen of swampy places and is, therefore, a bird with which nearly every fisherman of our swamp lakes and bayous is familiar. Although it sometimes comes up into our gardens to nest in bird boxes or gourds, it never strays far from water and normally builds its nest in a hole in a stump standing in water. The male of the species is unquestionably one of our most attractive birds. Its golden-yellow head and yellow under parts contrast with its yellowish-green back and bluish wings and tail. The outer tail feathers have a considerable amount of white that is often flashed when the bird is excited. The female, though somewhat duller in plumage, closely resembles the male. The Blue-winged Warbler is descriptively similar, but its much smaller bill, narrow black line through the eye, and white wing bars are all points that it does not share with the Prothonotary Warbler.

The song of the Prothonotary is a loud, ringing *peet, tweet, tweet, tweet* that reverberates through the swamps from the time of its arrival in mid-March until late summer. Southward migration begins in September, but the bird's departure from the state is not completed until the middle of October. The three to eight beautiful rose-tinted eggs are liberally blotched with chestnut-brown, intermingled with blotches of gray or lavender.

SWAINSON WARBLER. *Limnothlypis swainsoni.* Pl. XXX; p. 430

The Swainson Warbler is, for some reason, often overlooked even by good ornithologists. There are periods, comprising many decades, in the bird's history when it has been virtually a lost species. Following its discovery in 1832 by the Reverend John Bachman, the good friend and collaborator of Audubon, it was practically unknown until 1884. From then until 1910 it received considerable notice, but after 1910 and until 1930 it was again seldom mentioned in ornithological writings. In the last twenty years much has been learned of its habits, one of the most notable facts being that it is not confined in its nesting to swampy places, but that it also nests in dense, dark rhododendron thickets at an altitude of several thousand feet in the Allegheny Mountains. Strangely, though, the bird can be present in an area and still escape detection. Indeed, I know one excellent ornithologist who had never succeeded in finding a Swainson Warbler and was astounded when we stood on the edge of a woodland no more than a few miles from his home and I casually commented, "There I hear a Swainson."

I suspect the species is overlooked for several reasons, one being that it

is a drab-colored bird, and another that it is reluctant to expose itself to view. The back is olive-brown, the top of the head is dark russet, the under parts are soiled white or faintly yellowish, and there is a white line over the eye that is accentuated by a faint dusky streak through and posterior to the eye. There is no white in the wings or tail. None of these characteristics add up to anything very distinctive. The Swainson is, however, the only brown-backed warbler with a solid brown cap and unstreaked under parts.

Another factor possibly accounting for the fact that the species is overlooked is the similarity of its song to that of the Hooded Warbler on one hand and to that of the Louisiana Waterthrush on the other. The best transliteration of it to come to my attention is that given by Maurice Brooks and William Legg. These two highly trained ornithologists describe the song as a *whee, whee, whip-poor-will*, the first two notes being uttered slowly, the last more rapidly and on a descending scale, and with no pause between the two sections. The accents in the last part of the song are on the *whip* and on the *wi-* part of *will*.

The nest of the Swainson Warbler is built in dense tangles of "switch cane," briers, or thick bushes. The ones I have seen have been rather bulky structures attached to the upright stalks three to five feet from the ground and always in or near a swampy area. The usual complement of three eggs is variable in color, being plain whitish with either a bluish, greenish, or pinkish tinge. Rarely the eggs are faintly speckled with reddish brown.

The Swainson Warbler usually arrives in Louisiana in the last few days of March or in the first week in April. It departs, as a rule, by late September.

WORM-EATING WARBLER. *Helmitheros vermivorus.* Pl. XXX

This warbler is a rather uncommon transient and extremely local summer resident in Louisiana. Although the species has been observed on fairly numerous occasions in the vicinity of Jonesboro in summer, actual evidence of breeding has been found in only one locality, near St. Francisville, and even there the actual nest (a well-hidden structure of rootlets, strips of bark, and leaves, placed on the ground) is yet to be discovered. Jas. Hy. Bruns found Worm-eating Warblers present in summer in the deep-gullied and well-shaded beech-magnolia woods and although he has not succeeded so far in locating an actual nest, he has more than once seen young birds just out of a nest and still partially covered with natal down. Strangely enough, John James Audubon, who lived for a considerable time near St. Francisville, never saw the bird there.

The Worm-eating Warbler is greenish olive above and olive-buff below and has four prominent black lines on the head, two enclosing a buffy stripe in the middle and one passing through each eye from the bill to the nape. No other North American warbler is olive-buff below; nor is there any other with a buffy stripe on the crown bordered by black. The Worm-eating Warbler further lacks wing bars or any white in the tail, and the sexes are alike. The song, a simple buzzing *che-e-e-e-e*, is difficult to distinguish from the notes of the Chipping Sparrow. Fortunately, the two never occur in the same habitat, for the Chipping Sparrow is typically a bird of the pine woods or pastures.

Worm-eating Warblers appear on their nesting grounds at St. Francisville sometimes as early as March 14, which is well in advance of the main migratory flights. In fall migrants continue to pass through the state until October 1, sometimes later.

GOLDEN-WINGED WARBLER. Pls. XXX, XXXI

Vermivora chrysoptera.

The Golden-winged Warbler is a fairly common spring and a common fall transient. It gets its name from the yellow patch in the wing, which is only one of its several distinctive features. Others are the yellow forehead, black eye patch, black bib on otherwise immaculate-white under parts, and bluish-gray upper parts. The female has the black replaced by blackish gray. In spring the species is most likely to be found in the heavily wooded uplands, but in fall it is numerous in such places as the cottonwood-studded battures along the Mississippi River and other large streams.

Spring arrivals usually appear with the first wave of migrants after the beginning of April, and the bird is seen irregularly until the first part of May. Fall migration is early, for the species regularly appears as far south as Baton Rouge by the middle of August, after which time it may be seen frequently until the latter part of October. The song is a simple buzz that W. M. Tyler describes as *zeee, zer, zer, zer*. The Golden-wing breeds mainly in the upper Mississippi Valley and in central-southern Canada; it winters in northwestern South America.

BLUE-WINGED WARBLER. *Vermivora pinus.* Pl. XXXI

The Blue-winged Warbler is a somewhat irregular and uncommon spring transient but fairly common fall transient (extreme dates: March 22 to May 20; August 4 to October 14). Its alleged nest building in Bienville Parish

in 1934 has not been supported by any additional evidence of breeding there or elsewhere in the state.

This bird has the top of the head yellow and the under parts yellow; there is a narrow black line through the eye; and the bluish wings possess two prominent but narrow white wing bars. It therefore bears no color resemblance to the Golden-winged Warbler, yet in places where the breeding ranges of the two species overlap in the northeastern United States, hybridization is frequent and two general types of intermediates result. One is called the Brewster Warbler, the other the Lawrence Warbler, since at one time, before their true nature was understood, they were each regarded as a distinct species (see Plate XXXI). The first-generation offspring of a cross between a typical Blue-wing and a typical Golden-wing results in birds all of the Brewster type, which is similar to the Blue-wing except that the throat and belly are white (or with only a tinge of yellow) and the wing patch is broadly yellow. This may be explained on the basis of current genetic theory, by postulating (1) that plain throat is dominant over black throat, (2) that white under parts are partially dominant over yellow under parts, and (3) that the single broad yellow wing bar is partially dominant over the two narrow white wing bars. A cross between two of the first-generation hybrids would result in what is known as segregation, a genetic phenomenon wherein the expected 9-3-3-1 ratio in the offspring of such a cross would be nine Brewsters to three apparent (phenotypic) Golden-wings to three apparent Blue-wings to one pure recessive, the Lawrence Warbler, which is like a Golden-wing but has yellow replacing the white. These interhybrid crosses are believed, however, to be extremely rare in nature (only two cases known) and not sufficient to account for the numerous examples of the Lawrence Warbler that have been recorded by field observers. The combination of recessive characters needed to produce the Lawrence type can result, however, from a number of possible crosses between first-generation Brewsters and genetically impure (heterozygous) Golden wing and Blue-wing parental stocks. Both the Brewster and the Lawrence Warblers have been recorded in Louisiana.

BACHMAN WARBLER. *Vermivora bachmanii.* Pl. XXX

The Bachman Warbler is a species that is shrouded in considerable mystery. It first became known to science in July, 1833, when Dr. John Bachman shot two individuals and observed several more, all within a short distance of Charleston, S. C. He turned the specimens over to Audubon, who de-

scribed them as representatives of a new species, which he named in honor of his friend and collaborator. Over fifty years passed before another individual of the species was seen, this time in Louisiana. Charles G. Galbraith, a professional plume collector, who was procuring feathers for the millinery trade, shot 38 of them in the springs of 1886, 1887, and 1888, and still others in 1891, all on dates between February 27 and March 20, and all in the vicinity of Mandeville on Lake Ponchartrain. His interest was primarily that of getting any kind of small, bright-colored bird that would be suitable for skinning and drying with wings spread and with the head turned back, ready for pinning on fashionable ladies' hats. The species must then have been exceedingly abundant for him to have obtained so many specimens of it. At about the same time it was plentiful, at least in migration, in southern Florida (where on March 3, 1889, alone, 21 birds struck the lighthouse on Sombrero Key) and in other localities in the southeastern United States.

Since the time of Galbraith there have been fewer than a dozen records of the Bachman Warbler in Louisiana, despite an intensive search for it, even in the vicinity of Mandeville. It is now not regular in its occurrence anywhere; some years pass without any being seen. It is indeed today the most rarely observed North American warbler.

The species inhabits heavily wooded swampy areas, and hence there are probably breeding pairs here and there through many parts of Louisiana, despite the fact that there are actually only two or three records of it in the breeding season. No nest has yet been found in the state.

The male Bachman Warbler is readily recognizable by its black throat and yellow breast, in combination with the fact that the forehead is yellow, bordered posteriorly by black. The remotely similar male Hooded Warbler is decidedly larger and has the black of the head and throat broadly connected in the form of a hood. The back of the Bachman is olive-green, and all except the middle tail feathers are tipped with white on the inner web. The female lacks the black cravat and the black on the crown and hence somewhat resembles the female Hooded Warbler and the first-year female Black-capped Warbler, which are also yellow below and greenish yellow above. The female Bachman, however, has the top of the head and cheeks pale gray, punctuated by a yellow eye ring. The female Hooded is much larger and shows a great deal of white in the tail.

The song of the Bachman Warbler is described as a buzz, similar to the song of the Parula Warbler but without the rise at the end. It must also, therefore, resemble the songs of the Worm-eating Warbler and Chipping

Sparrow. For twenty-five years I have listened and looked for this bird. In early March I have searched the woods near Mandeville, where Galbraith found them plentiful sixty years ago, and I have walked for miles along the banks of the Suwannee River where William Brewster and Frank M. Chapman reported them common in 1890. Despite these efforts the Bachman Warbler remains the only breeding bird of the southeastern United States that has eluded me. My failure to find it is not the source of regret that it might seem to be. The out-of-doors would lose some of its appeal if there were nothing new left to look for. Right this moment I am planning where I shall search for the Bachman Warbler next spring, or if that fails, where I shall search the spring thereafter!

TENNESSEE WARBLER. *Vermivora peregrina.* Pl. XXXI

The Tennessee Warbler breeds in Canada and the extreme northern part of the United States and winters in southern Mexico, Central America, and northern South America. In Louisiana it is a common spring and fall transient, as it is elsewhere in the Mississippi Valley. Although occasionally the Tennessee Warbler is seen in March, it does not appear in numbers until the first week of April, whereupon it remains quite common until well after the first of May. Fall migrants appear in the second week of September and are seen regularly until the end of October.

The adult male in spring is bright olive-green on the back, pale gray on top of the head, and white below (sometimes with a faint tinge of yellow); there is a faint light grayish line over the eye and a thin dusky line through it. In fall the adult male resembles the adult female, which is yellowish green above and faintly yellowish below, with white under tail coverts. Immatures of both sexes in the fall also resemble the adult female but are even more yellowish. The white under tail coverts serve to separate females and immatures from the somewhat similar Orange-crowned Warbler. The lack of wing bars or any pronounced facial pattern renders the Tennessee Warbler quite nondescript and may sometimes cause confusion with some of the small vireos; but its thin, pointed bill should classify it at a glance as a warbler.

The species is quite common in spring in the large trees of our cities, where it can be heard uttering its twittering song which one author describes thus: *wi-chip-wi-chip-wi-chip-wi-chip-wi-chip-wi-chip-chip-chip-chip-chip-chip*, the last syllables louder and more emphatic than those at the beginning. In fall the bird seems to prefer the wooded borders of streams and is especially numerous in the willows and cottonwoods along the battures of the Mississippi River.

A White-eyed Vireo Inspects Its Pensile Nest SAMUEL A. GRIMES

Adult Swainson Warbler Feeding Its Young SAMUEL A. GRIMES

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A Parula Warbler Entering Its Nest In a Clump of Spanish Moss SAMUEL A. GRIMES

ORANGE-CROWNED WARBLER. *Vermivora celata.* Pl. XXXI

When in winter a small olive-green or grayish-green almost completely nondescript warbler is seen in a woodland thicket or in the shrubbery of one's yard, it is probably this species. Its name is a fortunate one, since it calls attention to a feature of the bird that bird students might otherwise not even realize exists. The orange can hardly ever be seen except in a bird in the hand, and then only by parting the feathers on top of the head. The species lacks all the marks that warblers usually possess in one form or another—wing bars, eye stripes and other facial patterns, and differently colored flank or rump feathers. It is so dark below that at a distance it appears greenish gray all over, and this uniformity itself serves as an excellent field mark. It frequently utters a sharp *chip*, which has a distinctive quality once it is learned and properly associated.

The Orange-crowned Warbler is a common winter resident, particularly in the southern part of Louisiana. Fall arrivals do not appear in the state until past the middle of October, but within a month the species is common and it remains so until the first part of April.

NASHVILLE WARBLER. *Vermivora ruficapilla.* Pl. XXX

Alexander Wilson, the contemporary of Audubon and author of the great work, *American Ornithology*, was the first to describe this warbler. He obtained two specimens near Nashville, Tenn., and hence gave the species the name Nashville Warbler. The gray head, white eye ring, yellowish-green back, yellow under parts, and the absence of wing bars or any white in the tail are, in combination, distinguishing marks of the species. In the fall it is duller, being more brownish on the sides of the head, back, and flanks.

The Nashville Warbler is a fairly regular and moderately common spring and fall transient that has been recorded from March 29 to May 10 and from September 7 to October 31. On April 11, 1942, the bird was unusually common on Willow Island, a chenier near Cameron, and it has been found to be one of the regular and more numerous migrants in spring near Shreveport. It has, however, never to my knowledge been observed in spring anywhere in the eastern half of the state. Fall occurrences are spread throughout Louisiana and are quite regularly recorded. A specimen that was taken in a dense patch of weeds along the shore of the New University Lake at Baton Rouge on December 19, 1938, is the only definite winter record for the species in the state.

PARULA WARBLER. *Parula americana.* Pl. XXXI; p. 430

The Parula Warbler is an extremely abundant summer resident throughout the hardwood forests of the state, except in the northwest corner, where it is only fairly common. It nests even on the narrow oak-lined cheniers adjacent to the Gulf. Its weak, lisping trill that "kicks up" on the end can be heard wherever there are large trees, from early March until late summer, when the song period of nearly all birds terminates. The Parula is not only one of the first migrants to arrive, reaching southern Louisiana in late February or the first days of March, but it is also one of the last to complete its exodus in fall. Although an occasional individual has been known to winter in the southern part of the state, this is the exception rather than the rule, for most Parulas are gone by the end of October.

One would think that the "Spanish moss" that profusely drapes the trees of our state would harbor the nests of many small birds, but the Parula Warbler is one of the very few birds that actually makes its home inside it (see photograph on page 430). It lays four or five white eggs with rufous markings in a wreath around the large end.

Both Audubon and Wilson called this bird the Blue Yellow-backed Warbler, but to the generation that followed them this name did not seem an appropriate one; so the bird became the Parula Warbler. The word *Parula* is the diminutive of *Parus*, the generic name for the titmice and the chickadees, and was applied to this warbler because of its habit of searching under foliage for insects in the manner of a chickadee. Now the fashion is again for literally descriptive names, such as Blue Yellow-backed Warbler. But I hope that authors will not go back to Audubon's and Wilson's name even though it is a perfectly fitting one. Either name is appropriate in its own way, but the policy of always trying to find a *more* appropriate one than the one currently in vogue leads to nothing but confusion and instability in our nomenclature. As the older name suggests, the bird is light bluish gray above, except for the middle of the back, which is greenish yellow. In the male, a narrow band of dark chestnut or rufous separates the yellow of the throat from the yellow breast. Females lack this breast band but may be distinguished by their bluish upper parts and yellow breast, and by the prominent white wing bars, white-tipped outer tail feathers, and white eyelids. Immature birds are strongly tinged above with yellowish green but otherwise closely resemble adult females.

YELLOW WARBLER. *Dendroica petechia.* Pl. XXXI

Although nearly all warblers possess some yellow, none has more than this species. Even the normally white patches that most warblers have in their outer tail feathers are replaced in the Yellow Warbler by yellow. The upper parts may tend toward greenish yellow and the breast may be minutely streaked, but basically the bird is entirely yellow. Adult males in spring have the forehead more intensely yellow than the remainder of the upper parts and the breast is finely marked with reddish streaks. Females and immatures are duller in color, particularly in fall, when some are greenish yellow above and below. But in all cases the yellow on the inner webs of the tail feathers is diagnostic of the species.

In Louisiana the Yellow Warbler is quite common in spring and abundant in fall, as it passes to and from its breeding grounds in the northern part of the United States and its winter quarters south of the Gulf of Mexico. There are records for Louisiana in every month of the year except February, but this is only because stray individuals will sometimes spend the winter here and because the last migrants to go north in spring virtually meet the first to come back, leaving only a short period of a few weeks in midsummer when none are present. Although the Yellow Warbler has been reported several times to breed in the state, there is no indisputable record of its actually having done so. It is, however, surprising that there are no breeding populations on the mangrove-covered islands along our Gulf Coast, for the species breeds abundantly in this habitat in the West Indies, Yucatán, and eastern Mexico, where it goes under the name of "Golden Warbler."

Francis H. Allen describes the song of the Yellow Warbler as *wee see wee see wiss wiss'-u.* Although this interpretation may not be perfect, it certainly comes closer than that of the lady who claimed that the bird says, "I want to see all the world." I have a thousand times since listened to the song of the Yellow Warbler, and for the life of me I cannot find in it any resemblance to her verbal rendition.

MAGNOLIA WARBLER. *Dendroica magnolia.* Pl. XXX

The Magnolia Warbler is a regular and common transient in the northern part of the state in spring, but it is less frequently seen at that season in the southern part except on the coast, where it is irregularly common to abundant. Although there are March records for the species, it generally does not appear

until mid-April or later, and the bulk of movement passes through in the last days of April and in early May. In fall it is abundant almost everywhere from the second week of September until the last week of October, occasionally remaining into November.

The Magnolia Warbler in spring is so conspicuously marked that it can hardly be confused with any other bird. The top of the head is gray, the cheeks and back are black, the rump is yellow, and the under parts are yellow, heavily streaked with black across the breast and on the flanks. The wings have a broad white patch, as does each side of the tail, midway between the base and the tip. In fall the Magnolia is more soberly dressed, but the *white rectangular patch* on the outer tail feathers is always distinctive.

In 1877 the distinguished New England ornithologist, William Brewster, gave his interpretation of the song as "She knows she was right; yes, she knows she was right." As ridiculous as such verbal expressions may seem, they are of tremendous aid in helping one to remember and to recognize bird songs.

CAPE MAY WARBLER. *Dendroica tigrina.* Pl. XXX

This species winters in the West Indies and migrates northward mainly through Florida; hence it is seldom recorded as far west as Louisiana. There are only four records of it in this state, all in spring, but I once saw another aboard ship in mid-May in the middle of the Gulf directly south of the Louisiana coast.

The spring male of the Cape May Warbler is quite yellow, particularly on the breast and face. It has a black cap, reddish cheek patch, broad white bar on the wing, and a dense streaking of black on the breast and flanks. Both sexes have a yellowish rump and a yellow patch on the side of the neck, which is especially useful in distinguishing the female, since she lacks most of the other features that identify her mate. The yellow area on the *side of the neck* in combination with yellowish wing bars and yellowish under parts, which are heavily streaked with black on the flanks, might serve to identify the fall adults and immatures. But this should be attempted only with great caution, even by experienced observers. Indeed, the only wholly reliable fall record would be one involving a specimen.

BLACK-THROATED BLUE WARBLER. *Dendroica caerulescens.* Pl. XXX

This is another species that, like the preceding one, seems to migrate mainly to the east of us. The few records for Louisiana are from Monroe, St.

Francisville, Baton Rouge, New Orleans, Pilottown, and Grand Isle, on dates from March 22 to May 20 and on October 14 and 20.

The male is blue above and black below, except for the white lower belly and white patch in the wing at the base of the main flight feathers. The female and immatures are buffy below and dark olive-green above, sometimes with a faint bluish tinge. This unstreaked dark coloration and the very dark cheeks, along with the white patch in the wing, make them easily separable from their relatives.

The Black-throated Blue Warbler breeds mainly in the north central and northeastern part of the United States. It is also abundant in summer on the higher ridges of the Alleghenies as far south as northern Georgia.

MYRTLE WARBLER. *DENDROICA CORONATA.* Pl. XXX

One of the most difficult tasks of the field zoologist is that of estimating animal populations and relative abundance with some degree of accuracy. Species of retiring habits that seem uncommon may in reality be far more numerous than other so-called common species that live in the open, where they are easily seen. But even with due allowance for the fact that the Myrtle Warbler is conspicuous, there can be little doubt that it is one of the commonest winter birds in Louisiana. Almost from the time it arrives, which is usually in the first week of October, until it leaves in late April, it seems to be virtually everywhere. It occupies nearly every type of habitat from one end of the state to the other and is incredibly abundant in the myrtle thickets of southeastern Louisiana.

The Myrtle is one of the largest of the Wood Warblers. In late spring it molts into a nuptial plumage that is striking in appearance, mainly black and white, but with patches of yellow on the crown, on the sides, and at the base of the tail. In fall, however, we see it as a grayish-brown bird, dingy white, streaked with dingy brownish, below; white on the throat; with less prominent patches of yellow on each side of the breast; and with a conspicuous yellow patch at the base of the tail. The Palm Warbler is only faintly washed with greenish yellow on the rump; furthermore, the under tail feathers are yellow instead of white, and the bird wags its tail continuously. A grayish-brown warbler in a bush, on the ground, or in a treetop, that has a conspicuous yellow patch on the rump is almost certainly a Myrtle Warbler. Its distinct liquid *chip* is also a good aid in field identification and should be learned at once by the beginning student.

The Myrtle Warbler breeds in the coniferous forests across the breadth of North America, from Alaska to Labrador, south to the northern part of the United States. It winters from Kansas to New England, southward to Panamá and the Greater Antilles. The more southern wintering birds probably cross the Gulf of Mexico from Yucatán, arriving in Louisiana in late March and in April. These transients evidently molt before leaving their winter quarters, for they appear here in full breeding plumage, quite distinct from the remnants of the local wintering population that have not yet finished their prenuptial molt.

AUDUBON WARBLER. *Dendroica auduboni.* Pl. XXX

The Audubon Warbler is a summer inhabitant of coniferous forests in western North America, from British Columbia south into Mexico. Some individuals of the species winter in mountain valleys almost throughout the breeding range, but a large part of the population spreads out over the flatlands of the southwestern United States and the plateau of Mexico. The Audubon Warbler was first recorded in Louisiana on November 15, 1952, when one

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Explanation of *Plate XXXI*

Wood Warblers

(Spring plumage unless otherwise specified; when only one bird of a species is shown, the sexes are quite similar)

1. male Palm Warbler (pp. 36 and 444), western subspecies; **1a.** female of same; **1b.** male of eastern subspecies. **2.** male Blackburnian Warbler (p. 439); **2a.** female; **2b.** male in fall; **2c.** immature Black-throated Green Warbler (p. 437). **3.** male Black-throated Green Warbler (p. 437); **3a.** female. **4.** male Chestnut-sided Warbler (p. 440); **4a.** female; **4b.** immature in fall. **5.** male Bay-breasted Warbler (p. 440); **5a.** female; **5b.** immature male in fall. **6.** male Orange-crowned Warbler (p. 433) in winter; **6a.** immature in winter. **7.** male Tennessee Warbler (p. 428); **7a.** immature in fall. **8.** male Blue-winged Warbler (p. 425). **9.** male Prothonotary Warbler (p. 422); **9a.** female or immature. **10.** male Yellow Warbler (p. 433); **10a.** immature in fall. **11.** adult male American Redstart (p. 454); **11a.** female; **11b.** immature male. **12.** male Painted Redstart (p. 455). **13.** male Common Yellowthroat (p. 450); **13a.** female. **14.** Yellow-breasted Chat (p. 451). **15.** male Cerulean Warbler (p. 438); **15a.** female. **16.** male Parula Warbler (p. 432); **16a.** female; **16b.** male in fall. **17.** male Blue-winged Warbler (p. 425); **17a.** male "Brewster" Warbler (p. 426); **17b.** male "Lawrence" Warbler (p. 426). **18.** male Golden-winged Warbler (p. 425).

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was collected from a flock of Myrtle Warblers a few miles below Louisiana State University. This record proved to represent more than just a single isolated occurrence of a bird that had strayed from its normal winter range. It was the first of *six* records of the species that ensued in that unprecedented winter for the occurrence of western birds in our state; for Audubon Warblers were also seen at Grand Isle, Cameron, Shreveport, and Alexandria, indicating that the species had invaded Louisiana in numbers. It was seen at Shreveport as late as April 25, 1953, and reappeared at that place and at Cameron on two dates in the winter of 1953-54.

The Audubon Warbler is almost a replica of the Myrtle Warbler, except that the former has a *yellow*, instead of a *white*, throat. Were it not for the fact that the two occur together in British Columbia without interbreeding, they would doubtless be regarded as geographical races of a single species.

BLACK-THROATED GRAY WARBLER. Pl. XXX

Dendroica nigrescens.

There are only eight records for this western species in Louisiana, all but one being from Cameron Parish on dates from late November to early January. The remaining record is that of a male that was in full song when found by Jas. Hy. Bruns near St. Francisville on March 21, 1954. The species is easily recognized by its black throat, black ear patch, and black crown. Otherwise it is blue-gray above and white below, except for the black streaks on the flanks and its two white wing bars. In contrast, the Black-and-White Warbler has a white streak down the center of the crown and the back is streaked with white. The male Black-polled Warbler has the entire top of the head black down to the level of the eye; the remainder of the cheeks is white (no black ear patch); and the black bib is lacking.

BLACK-THROATED GREEN WARBLER. *Dendroica virens.* Pl. XXXI

In northern Louisiana this attractive warbler is a fairly common transient in spring. In southern Louisiana, at least to the latitude of Baton Rouge, inland records at this season are few, although sometimes the bird is well represented in coastal concentrations of migrants. In the fall it is an abundant transient throughout the state. Its periods of migration extend from March 24 to May 24 and from early September (rarely mid-August) to sometimes as late as November 22.

In the male Black-throated Green Warbler the back and top of the head are yellowish green, the cheeks are yellow, the throat and sides of the neck black, and the breast and belly white, except for black streaks along the flanks. Females are similar, but the black of the throat is more or less mixed with yellow. Adults in fall are not as well marked as they are in spring, and the immatures lack the black throat. All fall birds are, however, easily recognized by the prominent yellow cheeks and greenish color of the back.

One of the best descriptions of the song is the graphic representation of straight lines which John Burroughs proposed many years ago: ——, —— V ——. There are, to phrase it differently, two monosyllabic notes, then a short one on a different pitch, and, finally, a single repetition of the first note. Although migrants are found in wooded areas, one of their favorite haunts in the fall is the swamp-privet which grows abundantly in the battures along our rivers and in other low places.

CERULEAN WARBLER. *Dendroica cerulea.* Pl. XXXI

Although the Cerulean Warbler is a widespread and fairly common, occasionally abundant, migrant in spring, it is much more regular in occurrence in fall. There are several published statements asserting that the species breeds widely in the state, but apparently no nest or fledglings have yet been found. Spring transients appear in late March or early April and are seen until early May. Fall migrants reappear in southern Louisiana as early as July 22, as evidenced by the presence of the bird in willow thickets along the lower reaches of the Mississippi River. The bulk of the southward movement takes place in August and early September, but an occasional individual may be seen past the middle of October.

The color of the upper parts of the male Cerulean Warbler is sky-blue; below it is immaculate-white, except for a very narrow blue or bluish-black band across the upper breast and a few black streaks along the flanks. The female and the immatures are bluish green or greenish blue above, with two white wing bars and a yellowish line over the eye; the plain under parts are strongly tinged with yellow, especially in the immatures. Female and immature Tennessee Warblers are similar but lack the white wing bars. The song of the Cerulean is very much like that of the Parula Warbler and has been described as *wee wee wee wee bzzz.* In the Parula the *bzzz* comes first, followed by a trill of monosyllables, whereas in the Cerulean there is a trill then the *bzzz.*

BLACKBURNIAN WARBLER. *Dendroica fusca.* Pl. XXXI

This beautiful warbler is a fairly regular transient in Louisiana, somewhat uncommon in spring but moderately common in fall. The spring passage begins the last week of March and extends into May, rarely to the end of that month. On the bird's return southward, however, it occurs here during a much shorter period, from the first week of September to the middle of October.

The male Blackburnian Warbler in nuptial plumage is black and white with flaming orange on the head and throat. The female is not so brilliant but is still easily recognized. In fall the adults and immatures alike lack the orange on the head and throat, but the basic pattern is there—yellow throat, dark ear patch, black and white stripes on the back, and white wing bars. The song has been described as a *chiddle chiddle chiddle chick-a chick-a cheet.*

The species breeds in the evergreen forests of eastern Canada and the northern fringe of the United States, as well as in the Alleghenies as far south as northern Georgia. It winters in Central America and northern South America.

YELLOW-THROATED WARBLER. *Dendroica dominica.* Pl. XXX

The Yellow-throated Warbler is a common summer resident throughout Louisiana. It occupies two distinct habitats, the dry pine-oak forests on the one hand and the wet wooded bottom land swamps on the other, and it seems equally at home in either place. The species is one of the first migrants to appear in spring; sometimes there are a few individuals on the coastal ridges before the end of February. At Baton Rouge the bird can always be heard singing in the tupelogum swamps before March 10. Throughout the day from that time until late in summer it continues to render its song, two or three clear notes followed by a short trill. Like the Parula Warbler it often builds its nest in clusters of Spanish moss, where it lays four or five whitish eggs with numerous distinct or obscure cinnamon- or olive-brown markings, sometimes evenly distributed, sometimes in a wreath around the larger end.

The species is easily recognized by its yellow bib, bluish-gray upper parts, and the prominent black facial marks consisting of a black forehead, black ear patches, and black malar streaks. In birds from central and western Louisiana, the line over the eye is white all the way to the bill, but birds from southeastern Louisiana have the white superciliary line ending in a tiny yellow spot on the lores.

The winter home of the Yellow-throated Warbler extends from South Carolina, Georgia, and Florida to the West Indies, and from central-eastern

Mexico to Central America. But in Louisiana the species has not been recorded after October 23, except for a lone individual seen on December 25, 1950, near Lafayette.

CHESTNUT-SIDED WARBLER. *Dendroica pensylvanica.* Pl. XXXI

If a variegated color pattern is of real survival value to an animal, then the Chestnut-sided Warbler should be eminently protected. To be sure, its bright, multicolored plumage does blend remarkably with the leaves of a tree, particularly where beads of sunlight are interspersed with various shades of green foliage. The top of the bird's head and the two wing bars are yellow; the back is yellow streaked with black; the under parts and a patch on the side of the face are immaculate-white; and the flanks are rich chestnut. No other warbler has chestnut on the flanks, except the Bay-breasted, which has a black mask and dark chestnut-colored crown. In autumn the adults are not as distinctly marked, although there is always some trace of chestnut on the flanks. The immatures, however, are very plain, simply grayish white below and light greenish above, with two yellowish wing bars. The *sharp line* of demarcation between the green of the upper parts, including the head, and the gray of the under parts is a good field mark.

The Chestnut-sided Warbler is quite common in northern Louisiana in spring, but in the southern parishes it is ordinarily less common and less regular, except for its occasional abundance on the coastal ridges where as many as 100 can be observed in a small area in periods of bad weather. In spring it appears usually with the first concentration of transient migrants arriving after the first of April and may be seen as late as the middle of May. Its return in the fall commences in late August and extends through October. During most of this time it is regular and frequent in its occurrence throughout the state.

The song can be verbalized as an emphatic "I wish to see Miss Beecher," a rather ridiculous description but one that is nevertheless remarkably suggestive of the bird's song. The species breeds across Canada and the northern half of the eastern United States and winters in Central America.

BAY-BREASTED WARBLER. *Dendroica castanea.* Pl. XXXI

This warbler is another in a long list of small woodland birds that merely pass through our state in spring and again in late summer and fall. Like most other transient warblers, it is irregular in occurrence in the southern part of

the state, but on occasions, particularly in the face of adverse weather, it may be abundant for a day or two at a time. In the northern part of Louisiana it appears more regularly from day to day. In fall it hardly ever occurs in large concentrations, but a few can be seen almost daily, particularly in October, as the species drifts southward to the shores of the Gulf, whence it takes off on a great overwater flight to its winter home in Central America. The spring passage is brief, taking place between April 17 and May 23, while the fall records cover the period from September 27 to November 15.

In spring the Bay-breasted Warbler cannot be confused with any other species. The top of the head is dark chestnut as are also the throat and flanks; there is a black mask through the eye and a cream-colored patch on the side of the head and neck. The female is similar but has less chestnut on the throat and flanks and the eye mask is dusky instead of black. Fall birds, however, are radically different. Their backs are greenish with black streaks, and the under parts are pale buffy and white; there are also two white wing bars. The fall-plumaged male may have a trace of chestnut on the flanks, but this color is always absent in the female and the immatures. In this plumage the Bay-breasted Warbler and the Black-polled Warbler can be distinguished only with great difficulty. In the former the under tail feathers are buff; in the latter, white. The best diagnostic character, however, is the color of the legs, which are blackish in the Bay-breasted, flesh-colored in the Black-polled. The identification of Bay-breasted and Black-polled Warblers in fall should not be undertaken by the beginner until he is familiar with the also nondescript immature Pine Warbler, for the three are easily confused. The immature Pine Warbler lacks any streaks on the back, which is generally darker and browner (less greenish). The song of the Bay-breasted Warbler is a high-pitched *teesi, teesi, teesi*, much like that of the Black-and-White Warbler.

BLACK-POLLED WARBLER. *Dendroica striata.* Pl. XXX

The Black-polled Warbler (previously called "Black-poll Warbler") is a common spring transient between April 13 and May 13. Although the species has been reported to occur in Louisiana also in fall, none of the fall records seem wholly acceptable. The fall plumages of the Black-polled and the Bay-breasted Warblers are almost identical in being simply olive-greenish above and whitish or faintly yellow, more or less washed with buff, below. Both have white wing bars, and, whereas the adult males of the Bay-breasted in fall sometimes have a trace of chestnut on the flanks, the females and immatures of the two species

are very similar at this season. The color of the legs is the best means of telling them apart. The Black-polled has flesh-colored legs, the Bay-breasted Warbler, black. In spring the male Black-polled is identified by its general black-and-white plumage. The top of the head is black, there is a black malar streak, and the sides and back are heavily streaked with black. The prominent white cheek patch is also distinctive. The female is more olive-drab with less black streaking. For comparison with other warblers that are predominantly black and white, see the account of the Black-throated Gray Warbler.

The song of the Black-polled is a ticking note that rises in volume and then descends. It is suggestive of the clicking sounds heard in department stores that have an overhead conveyor system for carrying money to the cashier and bringing back change in small metal containers. If one happens to be standing in the middle of the store, the metallic sounds made by one of the containers running on its track increases in loudness until it is opposite the listener and then diminishes as it gets farther away.

Among the favorite haunts of the Black-polled Warbler, as it passes through Louisiana, are pecan orchards. Its rarity in fall is due to the fact that, although it migrates northward through the Mississippi Valley after a trans-Gulf crossing, it returns southward by a more eastern route through the Atlantic Coast states, Florida, and the West Indies.

PINE WARBLER. *Dendroica pinus.* Pl. XXX

The Pine Warbler is an abundant permanent resident throughout the pinelands of Louisiana; in late fall and winter it also appears in other situations. The resident population is augmented in fall by the arrival of migrants from the North, and it is possibly these birds that we see outside of the species' normal pine habitat. Pine Warblers sometimes appear in hardwood forests and even on our coastal islands and cheniers, where they certainly seem strange and out of place.

The male of the species is identified by its white wing bars, its greenish-yellow upper parts, and its bright yellow throat and breast. The female is not as yellow as the male, and immature birds have only a tinge of yellow, being mainly greenish above and light-colored below. The song is a prolonged, liquid trill that is heard through our pine forests throughout the year, except possibly for the brief period of the bird's annual molt in late summer. The somewhat similar trill of the Chipping Sparrow, which often occurs in the same habitat, is much drier and more staccato.

The cup-shaped nest of the Pine Warbler is often saddled between two cones, near the top of a tall pine. Four or five eggs are laid that are white or grayish white, usually with a wreath of cinnamon-brown to blackish markings around the larger end.

PRAIRIE WARBLER. *Dendroica discolor.* Pl. XXX

In Louisiana, as elsewhere, the Prairie Warbler is not an inhabitant of prairies. Here it is a locally common summer resident in dry woods, usually ones in which there is a mixture of pine and scrub oak. In the last days of March it arrives almost simultaneously on its nesting grounds in the northern part of the Florida Parishes and in extreme northern Louisiana. Sta enough, it is seldom seen elsewhere in the state, except in fall, when northern populations are drifting southward toward the Gulf Coast.

The Prairie Warbler is yellowish green above with fine red marks on the back. The under parts are yellow except for heavy black streaks that begin on the side of the head and continue down the sides of the neck and the flanks. There are two yellowish wing bars and considerable white in the outer tail feathers; but since both of these characters are possessed by a number of warblers, they are of little diagnostic value. Neither are the red streaks on the back for they are too difficult to see in the field. But the bird's habit of wagging its tail, in combination with the two bold black stripes on its yellow face and the fact that the entire under parts are yellow, serves as an excellent field mark. Fortunately, adults of both sexes are nearly alike at all seasons and therefore pose fewer problems than we usually encounter in learning to recognize warblers whose appearance varies drastically with sex, age, and season. But the Prairie Warbler, too, is not without some of these handicaps, for the immatures in their first fall plumage possess only faint dusky indications of the facial and side stripes and lack the wing bars almost altogether. Again the tail-wagging habit and the combination of the bright yellow under parts and a distinctive dusky mark on the side of the neck are features that identify the bird.

The song of the Prairie Warbler is a simple *tzee tzee tzee tzee tzee* on a rising scale. Three to five whitish eggs that are spotted or speckled with various shades of reddish brown are laid in a cup-shaped nest that is placed in a low bush or sapling several feet from the ground. Breeding birds and their young desert the nesting grounds by the end of August, but migrants are seen in other habitats as late as the middle of October.

PALM WARBLER. *Dendroica palmarum.* Pl. XXXI

The Palm Warbler is an uncommon spring and fall transient and a very rare winter visitor in northern Louisiana. In southern Louisiana, however, it is at least moderately common as a winter resident, particularly in the eastern Florida Parishes. It appears in late September or early October and remains until the middle of April or slightly later. Nowhere in the state is it ever seen in numbers and, unless certain specific habitats are visited, it can be overlooked altogether. For example, on the census of birds that is made each year on one day during Christmas week, a project that has been going on for many years at various localties in the state, the Palm Warbler is always regarded as a species likely to be missed. In the St. Francisville-Port Hudson area a few individuals may sometimes be found in the dense stands of willows in the bottom lands along the Mississippi River. In the pine flats of the southeastern part of the state the species shows a preference for burned-over ground and may be seen feeding in such situations along with Pine Warblers and various sparrows.

The adult male Palm Warbler is predominantly brown above, with a reddish crown and a yellowish rump patch. Some individuals are all-yellow below except for brownish streaks on the sides and flanks. Others may have the yellow of the under parts restricted to the throat, lower belly, and under tail feathers, with the remainder of the breast and belly a dingy white. Immatures, particularly those of the pale western population of the species (see page 36 and plate XXXI), may lack any vestige of yellow above or below. Consequently, one of the best field characters of all is the manner in which the Palm Warbler continually wags its tail. The Prairie Warbler also wags the tail, but it can be eliminated either by its prominent black facial and side stripes, by its wing bars, by the absence of a reddish-brown cap, by its citrine-yellow under parts, or, in the immature, by the dusky spot on the side of the neck.

OVENBIRD. *Seiurus aurocapillus.* Pl. XXX

The Ovenbird is a familiar species in the northern part of the United States, mainly because of its loud, ringing song and its interesting habits. It is sometimes called the "teacher-bird," since it seems to say "teacher, teacher, teacher, teacher." The name Ovenbird is in reference to its domed, Dutch-oven-shaped nest. It is a common breeding bird in deciduous woodlands from

northwestern Canada to Newfoundland southward to northern Arkansas and northern Mississippi, but in Louisiana it is merely a bird of passage. It arrives in late March and is more regularly seen than some transient warblers, though never in large numbers, even on the coastal ridges. Usually none are encountered after the middle of May, but southbound migrants return in August and are moderately common until the middle of October. An occasional individual has been found in southern Louisiana in winter, and in Florida the species is of regular occurrence at that time. The bulk of the population, however, spends the cold months in the West Indies, Mexico, and Central America.

The Ovenbird is dark olive-green or greenish olive and white below, with numerous blackish streaks on the sides and flanks. It has a white eye ring and an orange stripe down the center of the crown, bordered on each side by black. These markings, in conjunction with the fact that it walks instead of hops and continually bobs its tail, combine to make it readily identifiable. It inhabits the forest floor and is usually seen in some shaded, secluded place.

NORTHERN WATERTHRUSH. *Seiurus noveboracensis.* Pl. XXX

The two species of waterthrushes and the Ovenbird are closely related, as evidenced by their general similarity in appearance and by the many behavior characteristics that they have in common. All three walk instead of hop and all of them bob their tails in the most ludicrous manner. This species is dark olive-drab above, and its under parts are yellowish, heavily streaked with dusky, even on the throat. The prominent line over the eye is usually yellowish. The Louisiana Waterthrush is darker above and whiter below, has the line over the eye white, and lacks the streaks on the throat.

Unevenly distributed like most transient migrants, the Northern Waterthrush is never more than fairly common anywhere in Louisiana in spring but is exceedingly numerous over a wide area in fall. It appears usually near the middle of April and can be seen only during the following three or four weeks; but on its return southward it is present for a much longer period, generally from the latter part of July until the last week of October. Their main period of abundance is from the end of August to the first week of October. Deep, shaded woods are among its favorite haunts, but in fall it is nowhere more numerous than in the willow thickets bordering our larger streams.

Francis H. Allen describes their song as *wheet wheet chip chip chip wheedleyou.* The notes are loud and musical and accelerate toward the end

LOUISIANA WATERTHRUSH. *Seiurus motacilla.* Pl. XXX; p. 447

The Louisiana Waterthrush is an uncommon transient in the southern part of the state and a locally common summer resident in northern Louisiana, occurring regularly but less commonly in the St. Francisville-Jackson area. It builds its bulky nest of dead leaves, sticks, fine grasses, and rootlets, all plastered together with mud, near the banks of woodland streams, often where the structure is concealed under an overhanging bank amid ferns and other foliage. Breeding birds arrive in mid-March, but the four to six finely speckled white eggs are not laid until late April. Southward migration, as evidenced by the appearance of the bird in areas where it does not breed (such as in the willow thickets along the battures of the Mississippi River at Baton Rouge), begins as early as late July and continues until late in October.

The Louisiana Waterthrush is darker above than the Northern Waterthrush, the line over the eye is white instead of yellowish, and the throat is immaculate instead of streaked. Its song is a wild, ringing, musical rendition that begins with three slurred whistles and ends in a profusion of twittering sounds.

KENTUCKY WARBLER. *Oporornis formosus.* Pl. XXX; p. 447

The Kentucky Warbler is a common breeding bird throughout most of the dense hardwood regions of Louisiana. It arrives in mid-March and is present until late October. The nest is ordinarily built on the ground or very close thereto. This location is not surprising, for the bird itself is habitually a denizen of the forest floor, usually where there are dark, damp, shaded areas and a profusion of ferns. The male will often mount to an elevated perch in a tree to pour forth its song that simulates the words *tur-dle tur-dle tur-dle*, in a manner strongly suggestive of the song of the Carolina Wren. The song should be learned at once, for it frequently leads the observer to Kentucky Warblers that otherwise would never be seen because of the denseness of the habitat they frequent.

The Kentucky Warbler is quickly identified by its dark greenish upper parts, its bright yellow under parts, and the prominent black streak that runs from the bill and the lower side of the eye down along the side of the neck. It also has a black forehead and this, with the other black of the face, causes the yellow eye ring and yellow lores to stand out conspicuously. The Common Yellowthroat likewise possesses a black patch, but the black area is broader and

Louisiana Waterthrush At Its Nest Under a Root in a Streambank

ALLAN D. CRUICKSHANK

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Female Kentucky Warbler Brings One Worm To Satisfy Four Offspring

SAMUEL A. GRIMES

Yellow-breasted Chat—The Buffoon of the Brier Patch SAMUEL A. GRIMES

Henslow Sparrow, a Skulker in the Grass, Obligingly Poses in the Open SAMUEL A. GRIMES

more rectangular and forms a solid mask across the entire face and forehead of the bird, uninterrupted by light-colored eye rings, superciliary lines, or lores. The legs of the bird are flesh colored, and it possesses no wing bars or white in the tail.

CONNECTICUT WARBLER. *OPORORNIS AGILIS.* Pl. XXX

The Connecticut Warbler is a very rare spring and fall transient in Louisiana, which has been recorded only once in each of the two migration seasons—one seen by me at Monroe, on October 9, 1931, and another observed by Mrs. George H. Lowery, Sr., at the same place, on April 27, 1936. Everywhere it is a notably late migrant in spring, sometimes not even reaching Florida, which is on its main northward route, until after the first of May. The best time to look for it, then, would be in periods of bad weather (which nearly always cause a precipitation of migrants) in late April and in May.

The species in spring is recognized by its olive-green upper parts, yellow breast and belly, and gray hood punctuated by a *complete* white eye ring. The Mourning Warbler also has a gray hood, but it lacks the eye ring, and in the male the throat is black. Immatures of both species in the fall are greenish brown or brownish green above and yellowish below, with only the Connecticut showing a suggestion of a hood. They are, however, so similar to each other and to female and immature Common Yellowthroats that field identification is often impossible. I have never heard the song, but it is said to resemble the words *three three three three*, uttered without inflections or other variations.

MOURNING WARBLER. *OPORORNIS PHILADELPHIA.* Pl. XXX

The Mourning Warbler is a very rare spring, and rather uncommon fall, transient in Louisiana. It has been observed only a few times in its northward migration in April and May; but in fall, between the last of August and mid-October, it is seen with some regularity, particularly if one knows its haunts and habits. At the latter season it seems most often to frequent brier thickets and dense stands of grass and coffeeweed and is thus very difficult to locate and to study satisfactorily. In spring the species closely resembles the Connecticut Warbler to the extent that it is olive-green above and yellow below and has a gray hood. The male Mourning Warbler, however, has a conspicuous black throat and no white eye ring. The female and immature lack the black on the throat, but the absence in spring of the eye ring is diagnostic,

since the Connecticut Warbler always has it. The difficulty of identifying immatures in fall is rendered insurmountable in many cases by the fact that many immature Mourning Warblers also exhibit an eye ring.

COMMON YELLOWTHROAT. *Geothlypis trichas.* Pl. XXXI

The Common Yellowthroat (whose name is not to be confused with that of the Yellow-throated Warbler) is one of the commonest birds in the United States, and it is the only species of warbler that breeds in all forty-eight states. In southern Louisiana the Common Yellowthroat is present the year around and is always at least fairly common, even in winter. In the northern part of the state, at least from Alexandria northward, it is only a summer resident, making its appearance in late March or early April. From the latter time it is common until near the middle of September. In spring, when migration is in progress, it is often incredibly abundant everywhere, particularly on some of our coastal ridges during adverse weather that "dams up" the flow of transients. Once in the spring of 1953, in a ten-acre tract of woodland near the Gulf beach of Cameron Parish, the yellowthroat population jumped from one lone individual on April 17 to a number in excess of 250 on April 20.

The favorite haunt of the Common Yellowthroat in the breeding season is a marshy place, particularly where there are cattails and other aquatic plants. It is also fond of dense thickets and rank stands of grass where there is exposure to sunlight. The male yellowthroat is recognized at a glance by its greenish-olive back, yellow under parts, and the *rectangular* black mask through the eye and across the face and along the upper part of the neck. The upper edge of the black mask is usually bordered with white. The female lacks the mask and is "just another little yellowish bird" until one learns to recognize her by her few intangible characteristics (among which the lack of bars or tail patches is notable) and by the distinctive yellowthroat call note, a sharp *tchep*. Most students begin by learning the appearance of the female through her association with the male. She is the brownest of the plain yellowish warblers and usually the whitest on the belly.

The song of the yellowthroat is a distinct *witchity-witchity-witchity-witchity-witchity-witch* or a *witchity-ta-witchity-ta-witchity-ta-witch*. Although the species is retiring in habits and lives in situations where it cannot be easily approached by stealth, a squeaking noise made by placing one's finger tips against the lips is a sure means of bringing one of these little birds into plain view.

YELLOW-BREASTED CHAT. *Icteria virens.* Pl. XXXI; p. 448

The chat has been labeled the "buffoon of the brier patch" because of its ludicrous antics and the medley of whistling, chuckling, barking, scolding, mewing sounds that pass as its song. The fact that it is classified as a Wood Warbler always comes as a surprise to students of ornithology, possibly because of its large size, which approaches that of the Eastern Bluebird, and because of its large bill. Despite its peculiarities, however, various anatomical characteristics indicate familial relationship to the warblers. Both sexes are olive-green above and yellow below, except for the white abdomen and the white under tail coverts. There is a white line above and below the eye, the former extending to the base of the bill, but there is no white in the tail and no white bars on the wing.

Although the chat is generally retiring in habits, hiding away in a dense thicket to give voice to its repertoire of comical sounds, it does often mount to the top of a tall tree to perform its "flight song." Sometimes it flings itself straight upward to a considerable height with its legs dangling, its head up, and its wings beating spasmodically. When it reaches the apex of its flight it bursts forth in an ecstasy of gurgles and whistles, and then, as if physically spent, it drops back to its perch, only soon to repeat the performance. An even more remarkable exhibition is performed when the "flight song" is rendered as the bird flies straightaway, from the top of one tall tree to another fifty feet or more away. Its incredibly slow transit in doing this is accomplished by a laborious flapping of the wings, barely sufficient to sustain flight, and with the legs dangling and the tail held down at a right angle to the body. All the while there is a flood of assorted sounds which the great New England ornithologist, Edward H. Forbush, recorded as follows: *c-r-r-r-r-r-r, whrr, that's it, chee, quack, cluck, yit-yit-yit, now hit it, t-r-r-r-r, wher, caw, caw, cut, cut, tea-boy, who, who, mew, mew,* repeated over and over in almost identical sequence. With notes like that, can there be any wonder that the chat is regarded as comical?

The one thing that above all makes the chat one of my favorite birds is its habit of singing at night, in the manner of the Mockingbird. Hence I am always delighted when, in mid-April, the species returns to Louisiana after its winter sojourn in the tropics. It usually remains no later than the end of October, although an occasional individual spends the winter in southern Louisiana.

The chat lays three to five speckled white eggs. Its bulky nest of coarse grasses and leaves, lined with finer grasses, is placed in a crotch in a dense thicket.

HOODED WARBLER. *Wilsonia citrina.* Pl. XXX

The Hooded Warbler is a common summer bird in Louisiana, for it breeds in nearly every hardwood bottom land from one end of the state to the other, except possibly in the northwestern corner where it seems to be only moderately common. The male is one of the most readily identified of all warblers. The yellow face is completely surrounded by the black of the head, neck, and throat. The remainder of the body is greenish yellow above and bright yellow below. Although there are no wing bars, there is in both sexes considerable white in the tail, which is conspicuously flashed as the bird flicks its tail. Females and immature birds are otherwise very nondescript, simply greenish yellow above and bright yellow below; therefore, they are similar to the first-year female and young of the Black-capped Warbler, which, however, are smaller and lack any white in the tail.

The Hooded Warbler arrives in Louisiana early in March and remains until the end of October. Four or five white or creamy-white eggs with tiny reddish-brown spots, usually forming a wreath around the larger end, are laid in a nest located in a crotch of a sapling or bush, four to five feet above the ground. In spring and early summer the woods fairly ring with the Hooded's song, a loud *whee, whee, whee-a-whee.* It also has a sharp *chirp* that can hardly be expressed phonetically but which is highly diagnostic when it is once learned by the field observer.

BLACK-CAPPED WARBLER. *Wilsonia pusilla.* Pl. XXX

This is the species that in the eastern United States was long known as the Wilson Warbler and in the West as the Pileolated Warbler (in reference to its black cap), the populations of the two regions being subspecifically distinct. The new name was adopted in order to provide the species with a single name for use in both the East and the West without implying reference to either of the two original geographical entities. The name Black-capped Warbler indicates the bird's most distinctive feature without resorting to such a Websterism as "pileolated."

In Louisiana in spring the species is everywhere a rare transient, but it is fairly common in fall migration. Normally the species is seen in late April

or May and from the second week of September through the third week of October. Perhaps every year an occasional individual remains in southern Louisiana through the cold months, but in the winter of 1952-53 the bird seemed to be virtually everywhere. This was the year when no less than nine species of birds never before recorded from Louisiana were found within our borders. Along with these novelties there were numerous other species that, although not being seen for the first time, were nevertheless birds of highly unexpected occurrence in Louisiana at that season. One such species was the little Black-capped Warbler which seemed literally to inundate the southern part of the state. The species was noted in counts of one to five on twenty-four separate dates between December 6 and March 28, at twenty-three widely separated stations, by more than a score of different observers. For so many of these little birds to have been recorded in the dense thickets which they frequent, there must have been immense numbers of them distributed through the vast expanse of suitable habitat available in southern Louisiana.

The male has a square black patch on top of the head and is otherwise simply yellowish green above and bright yellow below, with no wing bars or white in the tail. The immatures and many females lack the black cap and thus resemble the female and young of the Hooded Warbler. The latter, however, is larger and shows white in the outer tail feathers. Also the immature Black-capped Warbler has the bright yellow of the throat extending up on the face around the black eye, thereby forming a sort of light superciliary line. This aids in its separation from other plain yellowish warblers with which it might be confused. The female Common Yellowthroat has no such light line over the eye, is much browner above, and generally has brownish flanks and a whitish belly. The female Hooded Warbler is darker green above (less yellowish) and shows white when it flicks the tail. Immature Yellow Warblers have bright yellow patches on the inner margins of the tail feathers and are more uniformly pale yellowish all over.

CANADA WARBLER. *Wilsonia canadensis.* Pl. XXX

Other names for this bird might have alluded in some way to the diagnostic black necklace markings across the chest, or to its bluish-gray back and yellow under parts, or even to its yellow "spectacle" marks. The female and immatures in fall have only an indication of the black necklace, but the combination of plain bluish-gray upper parts and yellow under parts, along with the absence of white in the wings or tail, provides conclusive points in its identification.

In Louisiana, the Canada Warbler is strictly a bird of passage that is rather uncommon in spring, although occasionally as many as eight to ten can be seen in a day. It is fairly common in fall, being often quite numerous in the cottonwood-willow thickets on the banks and in the battures of our larger streams.

AMERICAN REDSTART. *Setophaga ruticilla.* Pl. XXXI

This beautifully attired bird is another aberrant member of the Wood Warbler family. The various redstarts differ from the other representatives of the family in several striking features. Notably these include their disproportionately long tail that is fanned out broadly at the end; their flat, flycatcher-like bill; and their behaviorisms. The male is unusually attractive, being jet-black, except for the white belly, the reddish orange on the base of the outer tail feathers, and the reddish-orange patches in the wings and on the shoulders. The female and the immatures are gray or greenish gray everywhere that the male is black and yellow where the male is reddish orange. Immature males sometimes have the yellow replaced by salmon color. The American Redstart is continually flitting from limb to limb, and habitually it holds the wings down alongside the body with the tips below the tail. The tail is narrow at the base but fans out broadly at the end. The males can be mistaken for nothing else; neither can the females and immatures, since the rectangular yellow patch at the base of the outer tail feathers, easily seen from below as well as from above, is unique.

The species is common, sometimes locally abundant, as a migrant in spring and very abundant in fall. It breeds locally in various parts of Louisiana, such as in the Pearl River swamp opposite Bogalusa, in deep beech-magnolia ravines near St. Francisville, and in the wooded areas near Minden. Spring arrivals appear in the last few days of March. Fall migration, as evidenced by the appearance of the bird in areas where the species does not breed, begins in late July and continues in volume until after the last days of October. The only winter record for the state is that of an individual presumed to be an immature female seen near New Roads on December 19, 1954, by Robert J. Newman and Herbert Stern.

The four or five grayish-white or bluish-white eggs, which are spotted and blotched with cinnamon- or olive-brown, chiefly at the larger end, are laid in a nest of finely interwoven tendrils and rootlets five to twenty feet from the ground in the crotch of a sapling. The song is high-pitched and rather monotonous, a sort of *tsee, tsee, tsee, tset.*

PAINTED REDSTART. *Setophaga picta.* Pl. XXXI

The normal occurrence of the Painted Redstart in the United States is limited to Arizona, New Mexico, and the Chisos Mountains of western Texas, where it breeds in high montane forests, and whence almost the entire population migrates southward into Mexico in winter. The inexplicable appearance of an adult individual in City Park in New Orleans on November 17, 1952, and its subsequent observation in the same place almost daily until December 7 provide one of the very few known instances of the presence of the species anywhere in the United States in winter except for the mountains west and northwest of Nogales, Ariz. The bird was first detected by Mrs. Thelma von Gohren and then two weeks later by Henry B. Chase, Jr., each without the other's knowledge.

The Painted Redstart is easily recognized by its striking combination of colors. It has predominantly lustrous black upper parts and hood, carmine-red breast and belly, and conspicuous white wing patches, white outer tail feathers, and white under tail coverts.

The Weaver Finch Family: *Ploceidae*

HOUSE SPARROW. *Passer domesticus.* Fig. 119

The House Sparrow, or English Sparrow, certainly requires no introduction. It is common in and about cities, as well as near farm houses, and is everywhere a general nuisance and a source of economic loss to man. Its presence discourages beneficial native song birds from entering our yards and gardens in greater numbers; it usurps nesting boxes that we build for martins, bluebirds, and woodpeckers; it denudes our bird feeding tables of the food we place there for Blue Jays, Cardinals, and other more attractive species; its large, massive nests clutter the drains and guttters of our houses; it consumes great quantities of our chicken feed; and its droppings defile our sidewalks and stain our automobiles. In brief, it is the *persona non grata* of America's avian population—an alien that unfortunately cannot now be deported.

The species was first introduced in Brooklyn in 1850 and 1852, and by 1870 it had begun its phenomenal spread throughout nearly all of North America where there were settlements. The bird's period of greatest productivity and abundance seems to have been during the horse and buggy days. Now that automobiles have replaced the horse, its population has declined somewhat. Even so, the bird is still tremendously abundant. One year in August alone I trapped and destroyed 360 House Sparrows in my yard. When on the last day of the month I caught 17 individuals, more than I caught the first day, I decided that the project of trying to eradicate the House Sparrow in that particular neighborhood was virtually hopeless. As birds were eliminated, others were simply moving in to fill the gaps.

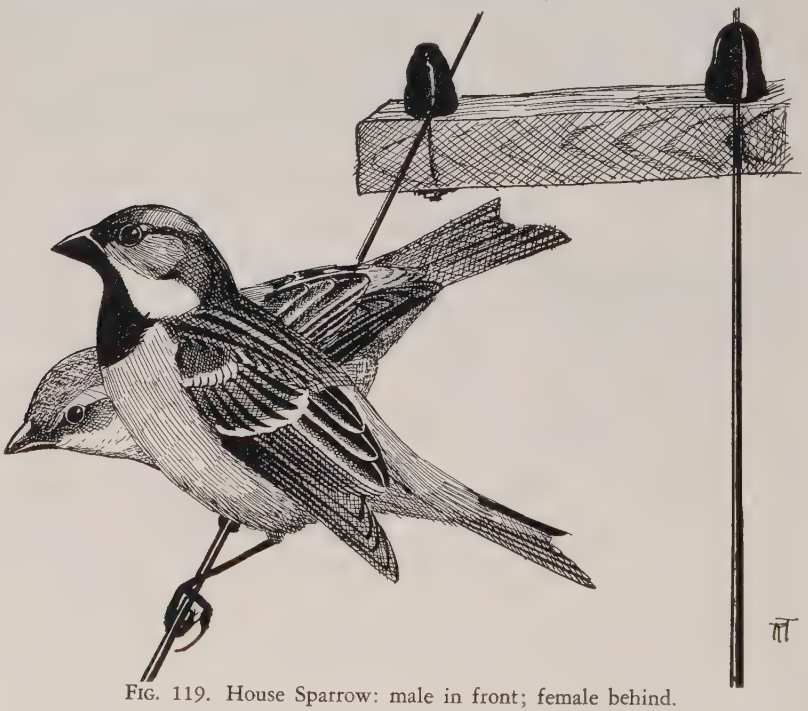

FIG. 119. House Sparrow: male in front; female behind.

The House Sparrow is a member of the Weaver Finch family of the Old World. Unlike our native sparrows of the family Fringillidae, which build cup-shaped nests, the Weaver Finches build nests that are large, domed structures into which the bird enters through a hole on the side; a tunnel leads upward and then downward toward the rear. There, in a mass of chicken

feathers and other soft materials, four to seven whitish eggs, densely but finely speckled with black, are laid.

The male House Sparrow, with its predominantly chestnut back and wings, is not unattractive. In fall, following the postnuptial molt, the characteristic black throat is obscured by the grayish tips of the feathers. As the winter season progresses, however, these light tips wear off, revealing the black beneath. The female is grayish brown above, except for a few black streaks on the back, and dirty white or pale buffy below. Although superficially she resembles some of the plain-colored native sparrows, the bird student quickly learns to know her, first by her association with the male and then by certain indefinable but distinctive qualities that go with her position as a member of the Weaver Finch family. Juvenile males resemble the female until after the postjuvenal molt that takes place in late summer.

The Blackbird Family:

Icteridae

This large family includes blackbirds, orioles, meadowlarks, and their allies. The group is confined to the Western Hemisphere, where there are nearly 100 species, most of which are tropical or subtropical in distribution. Some, like the orioles, build deep, pendulous nests, are brilliantly colored, and are capable of rendering superb songs. Others build cup-shaped nests, are drab in appearance, and emit squeaky, unmusical sounds. And there is even one, the Brown-headed Cowbird, that builds no nest at all but instead lays its eggs in other birds' nests.

BOBOLINK. *Dolichonyx oryzivorus.* Pl. XXXII

The Bobolink is a common spring transient throughout Louisiana but extremely rare this far west in fall on its return journey southward. It seldom appears before the last of April, but from then until late May or early June it can be seen in small flocks, mainly in uncut hay fields. The rarity of the Bobolink in Louisiana in fall is demonstrated by the fact that at Baton Rouge it has been seen only once in that season, despite more than twenty years of intensive field work there.

The male Bobolink is strikingly and diagnostically attired in black, punctuated by white patches on the wings, yellow on the nape, and an extensive white area on the rump and lower back. The female is simply buffy-yellow, streaked above with black. The remotely similar female Red-winged Blackbird is dull brownish or brownish black above and dingy white, heavily streaked with blackish, below.

The song has been described as a rollicking melody that seems to suggest to some people the phrase *bob-o-link, spink, spank, spink*. It may be heard in our fields as the males move northward toward their breeding grounds in the northern United States and southern Canada. The species winters in South America, south of the Amazon River.

EASTERN MEADOWLARK. *Sturnella magna.* Pl. XXXII; fig. 120

The Eastern Meadowlark, or "field lark" as it is often called, is in no sense related to the true larks (which are extremely rare in Louisiana). It is instead more closely kin to the blackbirds. The bright yellow breast with the V-shaped band across the chest and its habit of singing loudly from fence posts, telephone wires, and haystacks in the vicinity of fields that are its home, make it both conspicuous and attractive. It is common the year around, going about in loose flocks in winter and breaking up into pairs in early spring.

The song to me seems to say "laziness will kill you," the last two notes being slurred downward. The nest is built on the ground and is roofed over, making it very difficult to locate. The four to six eggs are white, spotted with brownish. For the distinctions between the Eastern and Western Meadowlarks, see the following account.

WESTERN MEADOWLARK. *Sturnella neglecta.* Fig. 120

Despite the fact that seven states have either officially or unofficially adopted the meadowlark as their state bird, there are probably very few peo-

ple, aside from ornithologists, who know that there are two kinds of meadowlarks. This is not surprising, since the two species are barely distinguishable and then only under the most favorable circumstances. The significant color differences between them are that the Western Meadowlark is noticeably lighter above, being olive-brown or grayish brown instead of reddish brown, and the bars on its inner wing feathers, rump, and tail are not connected along

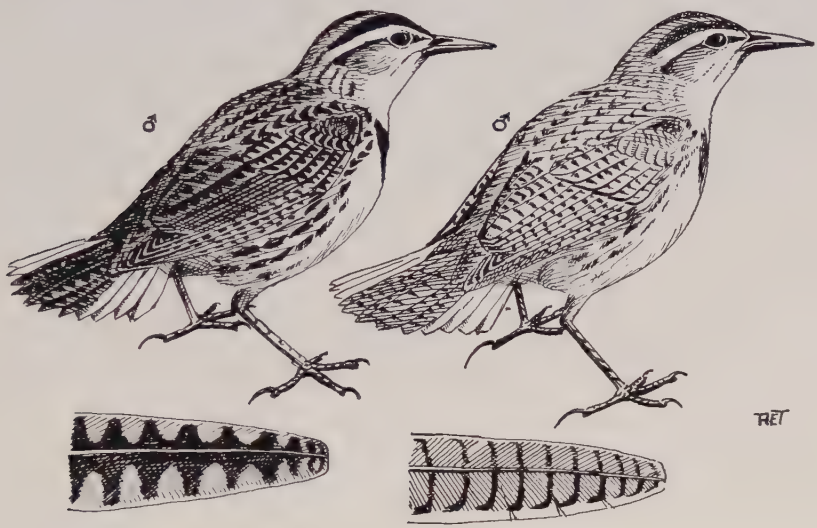

FIG. 120. The two species of meadowlarks: Eastern Meadowlark (left) and Western Meadowlark (right). Also shown is one of the innermost secondaries of each species. The fact that the black cross bars are connected along the shaft of the feather in the Eastern Meadowlark but not connected in the Western is a useful field mark under favorable circumstances.

the shaft (fig. 120). The chief distinction between the two species, however, is in their songs, which are totally dissimilar. The Eastern Meadowlark has generally a four-noted, slurred song, while the Western Meadowlark's song consists of nine or ten notes, some double, that are both flutelike and gurgling. Where the summer ranges of the two species overlap, there has been little indication of interbreeding. Consequently, regardless of the difficulties we have in telling them apart, the birds themselves evidently experience no uncertainty in this regard.

In Louisiana the Western Meadowlark is a winter resident occurring mainly from November to March. In northwestern Louisiana, however, it remains

much later. Singing males, apparently with well-defined territories, were seen near Gilliam in Caddo Parish in April and May, 1952. One of the dome-shaped nests of this species containing five eggs, indistinguishable from those of the Eastern Meadowlark, was discovered in the same area on May 11. The main breeding grounds of the Western Meadowlark are in the Great Plains region, westward to British Columbia and southward into Mexico.

YELLOW-HEADED BLACKBIRD. Fig. 121

Xanthocephalus xanthocephalus.

The Yellow-headed Blackbird is a very rare winter visitor and a rare spring transient (May 3 to 16) in Louisiana. The male is as large as an American Robin or Common Grackle and is easily distinguished by its bright yellow head and white wing patches contrasting with an otherwise black body. Young males and the females are browner and have most of the yellow confined to the throat and chest.

Fig. 121. Male Yellow-headed Blackbird.

This strikingly attired inhabitant of the marshes of the Great Plains region of the United States and Canada migrates in fall mainly into the southern part of its breeding range, in Mexico. Although there are occasional records of it in the eastern part of Louisiana, most of the observations are from localities along our western border. Even there, though, it is seen very rarely.

RED-WINGED BLACKBIRD. *AGELAIUS PHOENICEUS.* Pl. XXXII

There are few more attractive birds than the jet-black Red-winged Blackbird, particularly in spring when it pours forth its gurgling *konk-ker-ree* song from a fence post and flaunts its brilliant red epaulets, or patches on the bend of its wings. The female, in sharp contrast, is dull brownish above and dingy white below, heavily streaked above and below with brownish black.

The species is a common summer resident throughout the state, and in winter its numbers are augmented manyfold by the hordes of Red-wings that come down from the North and West to take advantage of our mild weather and the abundance of food that is here available to them. The sexes segregate into separate flocks at the end of the breeding season, males in one place and females and young elsewhere. Sometimes in the rice fields of southwestern Louisiana, a single compact flock may number thousands of individuals, which wheel and turn in the sky in unison, oftentimes appearing at a distance like a huge cloud of smoke. When spring comes, many of these birds head back northward to lend their beauty and charm to the lake shores and little patches of marsh. But before they are gone, our own breeding population has set about the task of establishing territories, building nests, and raising one or two broods of young. The three to five bluish eggs, spotted or splotched with purple or black, are laid in a cup-shaped nest of grasses suspended between stalks of reeds or limbs of bushes and small trees, sometimes twenty to thirty feet up but usually only a few feet from the ground. The call note is a sharp *chuck* or a slurred *teeer.*

ORCHARD ORIOLE. *ICTERUS SPURIUS.* Pl. XXXIV

This abundant summer resident occurs in all parts of Louisiana, including even such places as the spoil banks in the coastal marshes and the mangrove-covered islands along the edge of the Gulf. The fully adult male has the head, back, tail, and part of the wings black. The remainder of the wing is chestnut, as are also the rump and the under parts. Hence it is not nearly so re-

splendent as its close relative, the Baltimore Oriole, which is black and orange. The female and young of the year are greenish yellow above and bright yellow below, hence resemble immature Yellow Warblers, but are, of course, more than twice as large. The female Baltimore Oriole is slightly larger than the Orchard Oriole, more orange colored below, and darker above. First-year male Orchard Orioles acquire a black bib; otherwise they, too, resemble the female. Finally, in the second year, the male acquires the full-dress coat of black and chestnut.

The Orchard Oriole builds its partially pendulous nest of closely interwoven grasses in a bush or tree, usually eight to fifteen feet above the ground. In it are placed three to five bluish-white eggs, blotched and scrawled with black markings. The song is a highly pleasing but jumbled outburst of clear whistles that can be heard almost continuously from the time the bird arrives in late March until it departs in late summer.

BALTIMORE ORIOLE. *Icterus galbula.* Pl. XXXIV; fig. 122

Of all the vividly plumaged orioles that inhabit the tropics, none is more brilliant than our own Baltimore Oriole. It is larger than the Orchard Oriole and is a fiery reddish orange on the belly, wing patches, and rump, instead of drab chestnut. The female and immatures are more soberly dressed, being dusky-gray above and only slightly orange below. The song is a clear, flute-like whistle that is heard from the first week of April until late summer.

The species is particularly numerous in the very large shade trees of our cities, from at least the latitude of Baton Rouge northward, but it also inhabits stands of cottonwoods along our rivers and is quite fond of pecan orchards. The nest is a rather long, pendent structure of closely knitted grasses, firmly anchored to each side of a fork of a horizontal limb. Although the nest sways widely in a strong wind, the four to six bluish eggs, which are scrawled with blackish marks, are perfectly safe; only by turning the nest upside down could they be made to roll out. Occasionally an isolated Baltimore Oriole can

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Explanation of *Plate XXXII*

Three Members of the Blackbird Family

1. male Bobolink (p. 458) in spring. **2.** female Bobolink (p. 458) in spring. **3.** male Red-winged Blackbird (p. 461) in spring. **4.** female Red-winged Blackbird (p. 461) in spring. **5.** Eastern Meadowlark (p. 458).

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be found in southern Louisiana in winter, but normally the species is here only from early April until October, when it departs for its winter home in Middle America.

BULLOCK ORIOLE. *Icterus bullockii.* Fig. 122

The Bullock Oriole is the western representative of the Baltimore Oriole, which it resembles closely. Instead of the male possessing a black hood, as does the Baltimore, the Bullock Oriole has the black largely confined to a bib on the throat and there is a great deal of orange-yellow on the face and sides of the neck. It has a conspicuous white patch in the wings, whereas in the Baltimore the white is limited to the tips of the greater wing coverts and to white emarginations on the primaries and secondaries. The female is decidedly paler above and is much whiter (less yellowish) below.

With the exception of the unusual winters of 1952-53 and 1953-54, when Bullock Orioles were seen in numerous localities in southern Louisiana on numerous dates (October 9 to April 8), there are few records for the species in the state. In both the winters of 1953-54 and 1954-55 an individual daily visited a feeding table at a residence on the edge of Hackberry.

Fig. 122. Male Bullock Oriole (left) and male Baltimore Oriole (right).

RUSTY BLACKBIRD. *Euphagus carolinus.* Fig. 123

The Rusty Blackbird is a fairly common to abundant winter visitor throughout nearly all of Louisiana from mid-November until the second week of April, rarely occurring later. It is seen in large flocks feeding in fields, orchards, and open, wet woods. The male is all black except for the brownish tips to the feathers. The brown emarginations that are the basis for the bird's common

name, gradually wear off as winter progresses, so that by the time spring arrives the males are usually a solid shiny black, punctuated by yellow eyes. Females and immatures in fall are slate-gray, with a great deal more rusty tipping to the feathers than in adult males, but they too undergo great plumage change through wear. As the brown tips to the feathers disappear, the female assumes a uniform dark gray color, very similar to the color of the female Brewer Blackbird. The yellow eye is, however, diagnostic, since the eye color in the female of the latter species is dark. The call of the bird, according to A. A. Saunders, is a loud *chack* and the song, though musical, suggests "a slowly rotating wheel which has one or two different squeaks at regular intervals in its rotation."

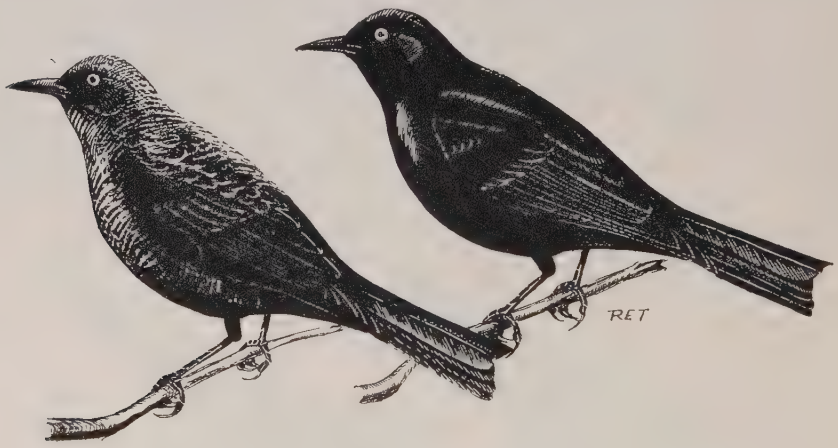

Fig. 123. Males of two similar species of blackbirds that visit Louisiana in winter: Rusty Blackbird (left) and Brewer Blackbird (right).

BREWER BLACKBIRD. *Euphagus cyanocephalus.* Fig. 123

This and the preceding species are sometimes seen together. Under these circumstances they are not too difficult to separate, particularly in the fall. The male Brewer Blackbird is always blacker in the fall since it does not usually possess the brownish tips to the feathers that render the Rusty Blackbird al-

Explanation of *Plate XXXIII*

Adult Grackles

1. male Boat-tailed Grackle (p. 465). 2. female Boat-tailed Grackle (p. 465). 3. male Common Grackle (p. 466).

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most as much rusty-brown as black. Another fairly good feature of the Brewer Blackbird is its whiter (less yellowish) eye. The plumage of the female in fall is decidedly more grayish (less brownish) than that of the female Rusty Blackbird, but by spring the female Rusty actually becomes the grayer of the two. Fortunately, the eye color is always diagnostic—dark in the female Brewer, yellow in the female Rusty.

The Brewer Blackbird is here only in winter, arriving in November and remaining until April. It breeds mainly from the eastern edge of the Great Plains westward to the Pacific Coast and southward into Mexico and was until rather recently believed to be only a rare winter visitor in the southeastern United States. Field work in this area in the last two decades has, however, shown it to be common or even sometimes abundant. It shows a predilection for open situations, such as pastures, burned fields, pine woods, and orchards, where it feeds entirely on the ground.

The beginning student usually confuses the Rusty and Brewer Blackbirds with the Common Grackle. The latter, however, is decidedly larger, with a bigger bill; has a wedge-shaped and much more graduated tail; and, though subject to variation in southeastern Louisiana, has the head usually iridescent bottle-green and the back metallic bronze colored or rich purplish. The Brewer Blackbird, on the other hand, shows only faint purplish reflections on the head and a dull greenish sheen on the back.

BOAT-TAILED GRACKLE. *CASSIDIX MEXICANUS.* Pl. XXXIII; fig. 4

No one can visit the coastal marshes of Louisiana without seeing this large, long-tailed blackbird, which is sometimes called the "chock" or "crow blackbird." Although its body size is much smaller than that of the Fish Crow, its exceedingly long tail gives it a total length equaling that of some examples of the Fish Crow. The male Boat-tail appears to be all black when viewed at a distance; but at close range, in good light, it turns out to be highly iridescent with intermingled blue, purple, and even dark green. The female is a nondescript reddish brown, except for the wings and tail, which are black. Young males, just out of the nest, resemble females in color. Within two months or so, however, they undergo a postjuvenal molt that puts them in their first winter plumage, a dull uniform black. When spring approaches they pass through a prenuptial molt whereby the drab plumage gives way to the shiny, iridescent coat of steel-blue and metallic greens and purple. Boat-tails in Louisiana have dark eyes, except for an occasional individual in winter that has wandered in

from the coast of eastern Texas, where the eye color is yellow and where the Boat-tails belong to a different subspecies.

The species gets its common name from the huge keel- or wedge-shaped tail that is particularly evident at all times, both in flight and when the bird is perched. The extremely long legs are utilized to the fullest, for the bird holds its body high. It also keeps the long tail elevated at an angle as it walks or hops over the ground, usually in wet marsh areas but also in plowed fields near the coast.

In Louisiana the Boat-tail is primarily a resident of the coastal marshes, although it occurs commonly in the city parks of New Orleans and occasionally in fall and winter it wanders a short distance inland along the numerous waterways in the southern part of our state. Only twice, however, has the bird been known to range as far up the Mississippi River as Baton Rouge. This is surprising, for in Mexico the species extends across the breadth of the Republic, occurring both in the tropical lowlands and on the high central plateau.

Boat-tailed Grackles build their massive nests of grasses in colonies between upright stalks of marsh vegetation, in bushes such as mangrove, or in the top branches of trees that grow on the cheniers. The large bluish-green eggs are beautifully blotched and scrawled with irregular purplish, vinaceous, and black markings. When proclaiming its territory or attempting to attract a mate, the male Boat-tail indulges in the most peculiar antics. Stretching its neck upward, with the bill pointed to the sky and with wings and tail fanned, the bird emits a series of weird, discordant squeaks and whistles that only technically can be classed as a "song." The call notes are a loud *chuck* or *chock* and a wide variety of unmusical sounds of one sort or another. After the breeding season is over, the males and the females with their young assemble in separate flocks.

COMMON GRACKLE. *Quiscalus quiscula.* Pl. XXXIII

The Common or "Purple" Grackle is a familiar bird everywhere in the state, except in the coastal marshes where it is replaced by its much larger relative, the Boat-tailed Grackle. Like the latter, it has a long, graduated tail, which it often folds keel-shaped into the form of a V. Its size, however, is only slightly larger than that of an American Robin, and although it somewhat resembles the Boat-tail, its colors are different in hue and are distributed in well-defined areas or plumage tracts.

Two general types of Common Grackles inhabit the state. One is the

bronze-backed type, with a bottle-green head, that breeds north of a line roughly from Lake Charles to Bunkie. The other type, with its metallic-green back and purplish head, breeds in the extreme southeastern corner of the state, mainly in the vicinity of Lake Pontchartrain. Where the ranges of the two meet, a zone of overlap occurs in which the hybrids are variously intermediate in color. Since the hybrid population tends to show a preponderance of purple, both on the head and the back, the name Purple Grackle has been used for it by many authors. Contact between the two types takes place along a long line extending from Louisiana to New Jersey and always with the same results. Consequently, there seems to be no basis for considering the two as separate species.

Common Grackles associate in small colonies, building their bulky nests of mud and grasses in the upper parts of trees. In late summer, when the task of rearing a family is completed, the birds undergo a complete molt and then gather into large flocks, which forage over the countryside, cover our lawns and parks, and are in every way conspicuous. In late afternoon these bands assemble from far and wide at one huge nighttime roost, which is usually in a large swampy wood. Aggregations running into the tens of thousands are common.

Although on occasion grackles may do some damage to crops, their food habits are for the most part beneficial, since they eat great quantities of insects. The usual call note is a coarse *chock*, and the song is a squeaky sound that is almost identical with that produced by a rusty hinge on a door or gate.

BROWN-HEADED COWBIRD. *Molothrus ater.* Fig. 124

The cowbird is famous for one thing—the female lays her eggs in the nests of other birds. When the time comes for her to deposit her clutch, she skulks about through the trees and underbrush until she locates her victim, usually a small bird such as a warbler, vireo, or sparrow. Stealthily, when the rightful owner is away, she sneaks in, drops an egg, and then disappears, never to have any share in the task of incubation or rearing of the young. The foster parents occasionally abandon their nest in these circumstances, but generally they work tirelessly to give the cowbird egg proper incubation and to feed the young bird all the food it needs. Because of their much smaller size, usually the legitimate young suffer both from the crowded conditions of the nest and the fact that they cannot raise their heads high enough to get food from their parents as regularly as does the baby cowbird.

There are various theories that purport to explain the parasitic egg-laying habits of the cowbird. One holds that the cowbird has lost some of its territoriality, causing it also to lose the urge to build a nest. Another theory contends that there is a "lack of attunement" in the normal sequence of territory establishment, territory defense, courtship, mating, nest building, and egg laying. In other words, the female cowbird gets the urge to lay and has eggs ready for laying before getting the urge to build a nest.

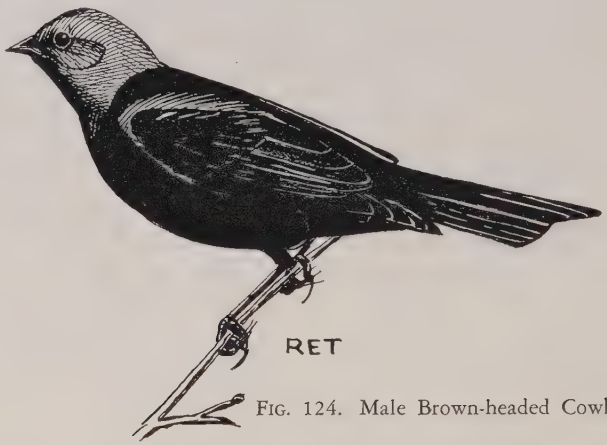

Fig. 124. Male Brown-headed Cowbird.

The cowbird receives its name from its habit of feeding around cows; for a similar reason it was once called the "buffalo bird." The male is solid black except for a brown head. The female is gray without any distinctive markings except a dull whitish throat. The absence of streaks visible in the field serves to distinguish her from the female Red-wing. In the juvenal plumage, which lasts only until late summer, the under parts are prominently streaked, but the conical bill alone is usually sufficient to distinguish young

Explanation of *Plate XXXIV*

Tanagers, Orioles, Eastern Towhee, and Red Crossbill

1. adult male Summer Tanager (p. 471); **1a.** spring male changing into adult plumage; **1b.** female. **2.** adult male Scarlet Tanager (p. 470) in spring; **2a.** adult female; **2b.** adult male in second or adult winter plumage; **2c.** male in first winter plumage. **3.** male Eastern Towhee (p. 482); **3a.** female. **4.** male Red Crossbill (p. 480). **5.** adult male Orchard Oriole (p. 461) two years old or more in spring; **5a.** female (juvenile male is very similar); **5b.** male in first spring plumage. **6.** adult male Baltimore Oriole (p. 462) in spring; **6a.** adult female in spring.

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6a
Robert E Tucker

birds from the female Red-wing. This same character also differentiates the female cowbird from the larger female Rusty and female Brewer Blackbirds.

The song of the Brown-headed Cowbird is a gurgling, bubbling rendition given by the male from some high, treetop perch. Like all blackbirds, it also has a chucking call note.

The cowbird is a common and widespread permanent resident in Louisiana, but since in winter it congregates in flocks in favorable situations, it is sometimes scarce in less favorable ones. In both summer and winter the species is more numerous in the southern part of the state than it is in northern Louisiana.

The Tanager Family: *Thraupidae*

The tanagers are members of another strictly New World family. Some of them are so similar to finches that authorities do not always agree as to their proper allocation. There are, however, 162 species now assigned to the family Thraupidae, and of these only four reach the United States. The remainder are mainly tropical or subtropical in their distribution. The family contains some of the most vividly colored of all birds.

WESTERN TANAGER. *Piranga ludoviciana.* Fig. 125

This Rocky Mountain species occurs only as a very rare spring transient and an accidental winter visitor in Louisiana. It has been recorded twice in New Orleans or the vicinity and twice at Grand Isle. Since there are other instances of its spring occurrence on the northern Gulf Coast, in Mississippi and northwestern Florida, observers should always be on the watch for it.

The male has a red face; yellow neck and under parts, as well as yellow rump; and black tail, wings, and back. It is easily recognized not only by this combination of characters but also by its two prominent yellow wing bars; no other tanager in the United States possesses wing bars of any sort. Females are simply dull greenish above and yellowish below but, like the male, can be quickly identified by the yellowish wing bars.

Fig. 125. Male Western Tanager.

SCARLET TANAGER. *Piranga olivacea.* Pl. XXXIV

I think that of all the brilliant birds I have ever seen, including those of the tropics, none excels the male Scarlet Tanager in splendor. The jet-black wings and black tail add to its trim appearance and accentuate the scarlet color of its body. The female is a sober olive-green, which is fortunate, since she does all the incubating of the eggs. It would certainly be disastrous to the species if the conspicuous male should attempt to share these duties, for he would surely attract predators.

The sequence of molt in the Scarlet Tanager is particularly noteworthy. Juvenal-plumaged males and females, just out of the nest, are solid greenish, much like the adult female. Before beginning their first fall migration, however, they undergo a postjuvenal molt in which they acquire black feathers on the fore part of the wing on what are called the wing coverts. In early spring a prenuptial molt gives them their first scarlet and black plumage. Following the nesting season, the postnuptial molt returns them to the sober green, second winter plumage; but this time the entire wing remains black. Thenceforth the males alternate between a scarlet and black summer dress and a green and

black winter dress. The interesting point is that males that are less than a year old and in their first winter plumage have only the coverts black, while birds two or more years old have the entire wing black, both the coverts and the flight feathers.

The Scarlet Tanager is a fairly common, sometimes fairly abundant, spring transient from April 2 to May 31. It is seen with the greatest regularity and in the largest numbers in northern Louisiana and on the coastal ridges but somehow manages to traverse the intervening area without often being reported. Of special interest in the latter connection is the fact that during a hail storm between 8:30 and 9:00 P.M. on the night of April 20, 1933, hundreds of Scarlet Tanagers must have been flying over the Louisiana State University campus, for on the following day no less than 27 were there found dead or injured.

On the bird's return to its winter home in northern South America it passes again through the state, being fairly common from the last of August until the middle of October. But the sober dress of both the male as well as the female makes the species rather inconspicuous at this season.

SUMMER TANAGER. *PIRANGA RUBRA.* Pl. XXXIV

The Summer Tanager, or "summer redbird," is a common nesting bird throughout the state wherever there are trees. It arrives the last week of March and remains at least in fair numbers until late in October. The male is solid rose-red and differs from the Cardinal, with which it is sometimes confused by careless observers, in that it lacks the black facial mark; its bill is horn colored, not red; and, of course, it lacks the crest. The female is yellowish green above and dull yellowish below. She differs from the female Scarlet Tanager in being more yellowish (less greenish), and from the female Orchard and Baltimore Orioles in lacking any vestige of wing bars and in having a heavy, conical bill.

The Summer Tanager is one of the most persistent songsters of our woodlands. Its caroling, robinlike song, consisting of two or three phrases, is repeated over and over again, almost to the point that it becomes monotonous. The call and alarm note is a loud series of *clucks*, which it pours forth when a person or other intruder is in the vicinity of its nest. The latter is generally placed on a horizontal limb, near its extremity, twenty to thirty feet up. The three to five bluish-white or greenish-blue eggs are heavily spotted with cinnamon- and olive-brown markings.

The Finch Family:

Fringillidae

This huge family of birds contains many more species than any other and is world-wide in its distribution, except for Australia, New Zealand, and, of course, Antarctica. It is mainly an aggregation of small to medium-sized ground-dwelling birds, in which the bill is generally conical in shape and thereby adapted for crushing seeds. Some species, however, are frugivorous and exclusively arboreal, and nearly all eat an appreciable number of insects.

CARDINAL. *Richmondena cardinalis.* Pl. XXXV

The well-known Cardinal is a widely and abundantly distributed permanent resident everywhere in Louisiana, except in the coastal marshes and some of the deepest inland swamps. It is often called the "redbird," but this name is to be avoided, since the male Summer Tanager is likewise red in

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Explanation of *Plate XXXV*

Grosbeaks and Other Fringillids

(Spring plumage unless otherwise specified)

1. male Cardinal (p. 472); **1a.** female. **2.** male Rose-breasted Grosbeak (p. 473); **2a.** female. **3.** male Black-headed Grosbeak (p. 474) in winter. **4.** male Blue Grosbeak (p. 475); **4a.** female. **5.** male Purple Finch (p. 478); **5a.** female. **6.** Pine Siskin (p. 478). **7.** male American Goldfinch (p. 479) in summer; **7a.** male in winter. **8.** male Indigo Bunting (p. 476); **8a.** female. **9.** male Dickcissel (p. 477). **10.** male Painted Bunting (p. 476); **10a.** female.

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color and is sometimes called the "summer redbird." The male Cardinal has a narrow area of black on the throat and around the base of its blood-red bill. Otherwise it is entirely red, darker above and brighter below. A prominent topknot gives it a debonair appearance. The male Summer Tanager, on the other hand, lacks the topknot and the black on the face, and its bill is horn colored instead of red. The female Cardinal differs from her mate in being more soberly attired in grayish brown, although her bill and crest are red and she has a touch of red on the wings and tail. Juvenal-plumaged males and females are similar to the adult female except that they lack any red and the bill is black. By late summer, however, the young males have undergone a postjuvenal molt that puts them in the full coat of the adult.

The nest of the Cardinal is built of grasses of various textures and is generally placed in a bush or shrub only five to eight feet above the ground. The three or four eggs are bluish white, heavily spotted with brown or umber. The song is a loud, clear whistle, "boys, boys, get up." In most species of birds only the male is a gifted songster, but this is not so in the case of the Cardinal. The female is, according to some listeners, more accomplished in this regard than her mate, possibly because her notes are softer in tone. The species has a distinctive call or alarm note that is best described as a *tsip*.

ROSE-BREASTED GROSBEAK. *Pheucticus ludovicianus.* Pl. XXXV

The male "rosebird," as it is often called, is black and white except for a prominent patch of rose-red in the center of its breast that extends beneath the wings and is therefore partly concealed except when the bird flies or flutters to another perch. The large conical bill is white, unless it happens to be stained by the juices of berries or wild fruits that form the chief items in this bird's diet. The female is grayish brown above and has a buffy line through the center of the crown, a brownish ear patch, and a whitish line over the eye; the wing coverts are tipped with white, forming indistinct wing bars; the under wing coverts are saffron-yellow (not lemon-yellow as in the female Black-headed Grosbeak); the under parts are buffy, streaked with grayish brown. Immatures are similar to the adult female but are even more buffy and more profusely streaked below.

The Rose-breasted Grosbeak is a fairly common and regular spring transient in northern Louisiana that is also occasionally numerous on the coastal ridges but only rarely observed in the intervening area. Its passage takes place mainly from the middle of April to the middle of May. In fall it is moderately

common throughout, from the last of September until the beginning of November. An occasional individual sometimes remains throughout the winter in the southern part of the state, but this is exceptional. The species seldom sings while in migration through the state, but should it be heard to do so, its song would remind the listener of an American Robin. Heard more often is the sharp metallic *kick* that serves as its call note.

The famous Swedish zoologist, Linnaeus, who devised the system of nomenclature that we use today, is accredited with making the Rose-breasted Grosbeak known to science. Linnaeus, however, based his technical diagnosis on an earlier drawing and description by the French ornithologist, Brisson, who called it "*Le Grosbec de la Louisiane.*"

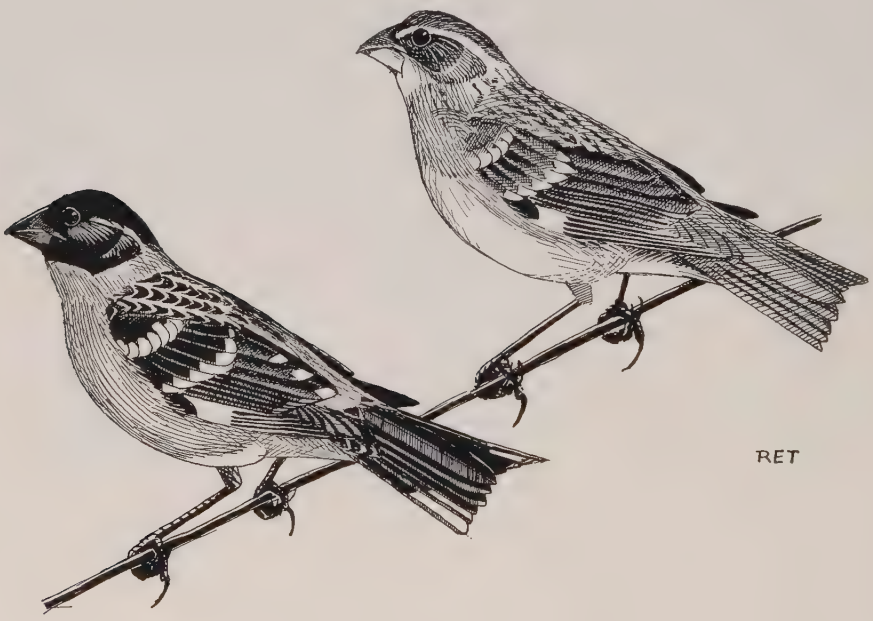

FIG. 126. Black-headed Grosbeak: male on left; female on right.

BLACK-HEADED GROSBEAK. Pl. XXXV; fig. 126

PHEUCTICUS MELANOCEPHALUS.

This Rocky Mountain species has been recorded in Louisiana only three times, in all instances in winter. Two records of its occurrence were at feed-

ing tables, one at Monroe, the other at Shreveport. The third record is of a bird seen and collected on Little Chenier in Cameron Parish.

In the adult male Black-headed Grosbeak the head, upper parts, and tail are black, except for a brownish collar, brownish streaks on the back, and prominent white wing bars; below it is rich cinnamon-brown, except for the center of the abdomen and lower belly, which is yellow. Adult females resemble the female Rose-breasted Grosbeak in the streaking on the head, but the under parts are rich, rusty-brown, not pale buffy. Immature males and females in the first winter plumage have a prominent brown ear patch and a white line over the eye and are dingy brown above and buffy on the chest, with scant streaking below. They are, therefore, similar to the immature Rose-breasted Grosbeak and can be distinguished from it only with difficulty. However, a bird at close range that raises its wings and allows the observer to see the color of the under wing feathers can be identified with certainty. In the Black-headed Grosbeak the color of these parts is lemon-yellow, whereas in the Rose-breasted Grosbeak the color is saffron-yellow.

BLUE GROSBEAK. *Guiraca caerulea.* Pl. XXXV

The Blue Grosbeak is a common summer bird in northern Louisiana and in the northern part of the Florida Parishes. Elsewhere in the state it is a fairly common to common transient, mainly from the middle of April to the middle of May and from early August to late October. There are casual records of its presence in the southern part of the state in winter. In summer the species shows a proclivity for mixed woods of oak and pine, particularly where there are stands of scrub oak. In fall, however, it is met with most often in dense stands of grass, in old cornfields, and in places where there are a great many brush and brier thickets.

The male is easily recognized in spring by its two wide, brownish wing bars and its otherwise all-blue plumage. The female is dark brown above and light brown below, with two buffy wing bars. Juvenal-plumaged males closely resemble the adult female. The adult male in winter is extensively washed with brown but still shows a considerable amount of blue. The song is similar to that of the Orchard Oriole, but decidedly less forceful and without the clear whistles. The call is a sharp *pink* that is often heard overhead at night in fall when birds are migrating relatively close to the earth.

The Blue Grosbeak builds its nest of grasses and rootlets, lined with hair and other very fine materials, in a low bush or thicket, seldom more than a few feet from the ground. The three to five eggs are pale blue and unmarked.

INDIGO BUNTING. *Passerina cyanea.* Pl. XXXV

This beautiful little bunting is seen literally in swarms during its northward migration in spring. It is not surprising that these flocks attract so much attention, since the color of the male in good light is a brilliant shade of blue (except for the color of the head, which is usually a dark blue or even black at the base of the bill). It is the only bird in the United States that is so uniformly blue and, therefore, should not be confused with any other species. The Indigo Bunting, unlike the Blue Grosbeak, has no wing bars. Also it possesses a smaller bill and its color is a much lighter blue. The females and juveniles, however, are brownish above and dingy white, tinged with brownish and sometimes indistinctly streaked below. Consequently, they resemble certain sparrows and would be difficult to recognize in the field were it not for the fact that the back appears uniformly brown and for the fact that the wings and tail generally show a trace of bluish.

The Indigo Bunting is a common breeding bird throughout the state, except in the coastal marshes and along the coastal ridges. It is especially numerous in brushy clearings along the edges of heavy woods and along highways and railroad rights of way. The song is a rather weak jumble of musical sounds, somewhat squeaky in quality, but pleasing nevertheless. The call is a sharp, thin *pseet* and, like the call of the Blue Grosbeak, it is often heard at night in fall, particularly on cloudy nights when a heavy volume of migrants is passing low overhead.

The main periods of migration are from early April to the first part of May and during September and the first three weeks of October. There are a few records in early winter in southern Louisiana, sometimes involving small flocks, but such records are by no means of annual occurrence.

PAINTED BUNTING. *Passerina ciris.* Pl. XXXV

To one who has never seen a male Painted Bunting, the description of this bird must sound fantastically unreal—head and sides of the neck, indigo-blue; upper back, yellow to golden green; rump, under parts, and eye ring, red. Strange as it may seem, these *are* the colors of this gaudy finch, which, moreover, is a common summer bird throughout most of Louisiana. The upper parts of the female are plain green, shading into dull yellow on the under parts. The immature male resembles the adult female.

The species arrives in the first half of April and is locally abundant during the period of migration, when sometimes it occurs in great flocks alongside our rural roads. Most of the birds of these large aggregations disperse or pass on, but the species remains as one of the more common summer residents of the state. This bunting is mainly a bird of the edges of woodlands, particularly where there is an abundance of dense cover in the form of low thickets and brush. The three or four bluish-white eggs, which have numerous brownish or chestnut markings, are laid in a cup-shaped nest in a bush or low tree. The song is a rather weak warble that lacks conciseness.

Fall migration begins in August and continues well into October. In the middle of this period the species is exceptionally common, particularly in the southern part of the state. Only rarely is one to be seen in winter, but there are records in the lower parishes for both December and January.

DICKCISSEL. *SPIZA AMERICANA.* Pl. XXXV

The Dickcissel is a common, locally abundant, summer resident in Louisiana, which usually arrives in the middle of April from its winter home in South America. It is a conspicuous bird, for it seems to like nothing better than to perch on telephone wires or on roadside fences when it pours forth its emphatic song, a loud *dick, ciss ciss ciss.* In size it is about the equivalent of the House Sparrow. The male has a white chin, black throat, and yellow belly; the cheeks and top of the head are ash-gray; the line over the eye is yellow; and the back is brown, heavily streaked with black. The female is browner on the head, lacks the black throat, and is much whiter (less yellowish) below. She resembles a female House Sparrow somewhat, but differs in having at least a faint wash of yellow on the breast, rufous patches on the shoulders, and a prominent line over the eye.

Despite the abundance of Dickcissels in June and early July, the bulk of them suddenly disappear in late July, and only a few are to be found in August and September; thereafter the species is absent or extremely rare, although occasionally an individual spends the winter in southern Louisiana. The rather bulky nest of coarse grasses and leaves, lined with finer materials, is placed on the ground or in bushes, usually at the edges of fields where doubtlessly many are destroyed each summer by mowing operations. The four or five eggs are plain bluish.

PURPLE FINCH. *Carpodacus purpureus.* Pl. XXXV

One of the redeeming features of the severe cold waves that occasionally push into Louisiana in winter, sometimes bringing sleet and snow and subfreezing temperatures, is the fact that with such weather Purple Finches often come in great numbers. In warm winters these beautiful birds may be quite scarce, particularly as visitors to our towns and cities. When cold weather brings a real invasion of Purple Finches, large numbers generally swarm into our berry trees or cover the ground of our lawns in search of seeds and possibly grit. The species has never been recorded in the state, even in extreme northern Louisiana, earlier than November 17; and, although there are isolated records as late as April, it is usually gone by the end of February.

The Purple Finch is about the size of a House Sparrow, but the color of the fully adult male is rose- or raspberry-red, which is especially bright on the head and rump. The females and the young males are heavily streaked above and below and thus resemble some of the striped sparrows. The thick bill that is almost round at the base, the rather deeply notched tail, and the fact that females and immatures go in flocks that nearly always contain the easily identifiable males, all serve to aid in their recognition. I have never heard the warbling song of the Purple Finch anywhere in Louisiana, and my ear is not particularly sensitive to the often uttered metallic *tick* that the bird makes.

PINE SISKIN. *Spinus pinus.* Pl. XXXV

A few Pine Siskins probably visit Louisiana each winter, particularly in the northern parishes, and we do have records in the state from November 16 to May 14. However, even though I have often observed this diminutive bird in the Rockies and in Mexico, it was not until the great invasion of the winter of 1952-53 that I first saw a siskin in Louisiana. This is mentioned merely as an indication of its usual rarity.

Pine Siskins are mainly birds of the evergreen forests of Canada and of the mountains of the West, but in winter they gather in flocks and wander over the greater part of the United States in search of favorable food conditions. The bird's diminutive size, its streaked plumage, and the yellow patches on the base of the outer tail feathers and in the wing are excellent field marks. The flocks feed energetically, often in sweetgum trees along with American Goldfinches, but are quick to take wing and wheel away to another part of a wood. While feeding, as well as when in flight, the siskins utter a

wheezy note that Peterson describes as a loud *clee-ip*. The most distinctive call, though, is its rather drawn-out buzzing *screeee*, a note that bears no close resemblance to any other bird sound.

AMERICAN GOLDFINCH. *Spinus tristis.* Pl. XXXV; fig. 127

The American or "Eastern" Goldfinch is a common, sometimes abundant, winter resident from November to April in most of Louisiana and a rare summer resident in the north central part of the state. In summer plumage the male is resplendent in its coat of bright canary-yellow, which is broken only by a small black cap and the predominantly black wings and tail. The wings have prominent white bars, the inner webs of the tail feathers are also white, and the unusually long upper tail coverts are grayish white. The female is a dull olive-yellow with blackish wings and conspicuous white wing bars. But we do not see many goldfinches in their bright summer dress, since the bird is very scarce in the season in which this plumage is worn. In winter the male is grayish brown on the back, and the head has only a moderate tinge of yellow; the throat and chest are dull yellowish and the belly is whitish; and the wings and tail are as they are in summer, except that the white bars and edgings to the secondaries are broader. The female is similar but has even less yellow on the head and less black in the wings.

One of the best aids in the identification of the American Goldfinch is its bounding flight and the peculiar call note that is often uttered when a flock is on the wing. Frank M. Chapman adequately describes the latter as

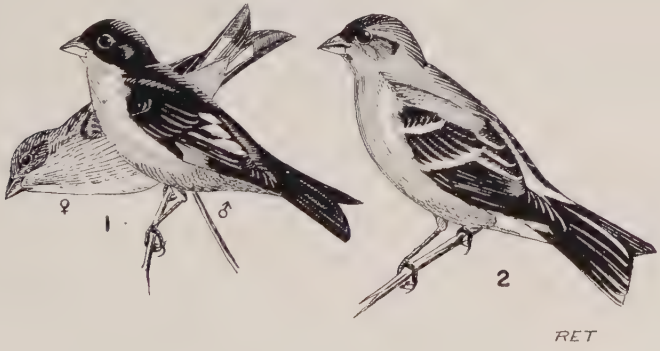

Fig. 127. (1) Arkansas Goldfinch (male in front; female behind) and (2) American Goldfinch (male in winter plumage).

per chic-o-ree, uttered as a hum. It has a pronounced whiney quality. The species has a great preference for the seeds of sweetgums and is more often seen hanging from sweetgum balls than in any other situation.

Proof of the nesting of the American Goldfinch in Louisiana rests on the discovery of a single nest a few miles west of Monroe. There are, however, quite a few summer records in the northern part of the state. Since the species is noted for being a late nester, its mere presence in a locality in full nuptial plumage as late as June provides no certainty that it is nesting there. The nest, constructed of fine grasses and lined with thistledown, is placed in trees or bushes five to thirty feet above the ground. The three to six eggs are pale bluish white.

ARKANSAS GOLDFINCH. *Spinus psaltria.* Fig. 127

The sole record in Louisiana and the easternmost occurrence anywhere for this western species is that of a female collected by John Gee in the village of Cameron on April 17, 1954. The Arkansas Goldfinch is noticeably smaller than the American Goldfinch, and in summer plumages the males of the two are radically different in color. The eastern bird in breeding plumage is bright yellow except for its black tail, black frontal patch, black-and-white wings, and white rump. In contrast, the male Arkansas Goldfinch, in both winter and summer plumages, has only the under parts yellow, the upper parts being all black except for white markings on the wings and tail. Winter-plumaged American Goldfinches are brownish above with only a tinge of yellow on the breast, while the female Arkansas Goldfinch in both winter and summer is greenish above and entirely yellow below. Moreover, in the American Goldfinch, the white on the central tail feathers extends to the tips and the under tail coverts are white, but in the western species the central tail feathers are black terminally and the under tail coverts are yellow.

RED CROSSBILL. *Loxia curvirostra.* Pl. XXXIV

As the name signifies, the upper and lower mandibles of this bird do not meet but instead cross each other. One would think that the crossbill would be hopelessly handicapped, but this is apparently not the case. I have stood under a pine tree in which a flock of these birds was feeding and have been amazed at the great number of sheaths of pine seeds that were literally raining down—the birds were opening pine cones that I do not believe could have

been opened better with a chisel and a hammer. Apparently their success depends on a rapid prying motion in which they somehow get a high degree of leverage.

There is only one record of the Red Crossbill in Louisiana, a specimen collected in March, 1888, near Mandeville, but the species is a notorious vagrant. Indeed, the example shot in Louisiana in 1888 is a representative of the subspecies that breeds from the Sitkan district of Alaska southward to the northwestern coast region of the United States. The movements of the species seem largely to be determined by the success of pine seed crops in the United States and Canada. The failure of pines to produce an abundance of seeds in the bird's normal, northern range, and the simultaneous success of the crop in the pine forests of the southeastern United States are probably the proper conditions under which we may anticipate the appearance of the Red Crossbill this far south.

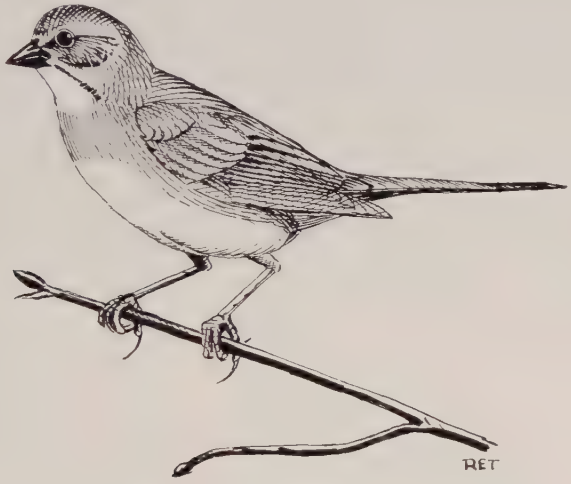

FIG. 128. Green-tailed Towhee.

GREEN-TAILED TOWHEE. *CHLORURA CHLORURA.* Fig. 128

This western finch has been recorded only once in Louisiana. I collected one in a thicket on a chenier near Johnson Bayou in Cameron Parish, less than a mile from the Gulf shore on December 28, 1952. The species breeds from central Oregon and southern Montana to southern California, southern New Mexico, and central-western Texas. Normally it winters from the southern part of its breeding range south to central-southern Mexico. The individual

found in southwestern Louisiana was apparently part of the astounding invasion of western birds into our state that took place in the winter of 1952-53 and which produced nine new species for the state list.

The Green-tailed Towhee is somewhat smaller than a Cardinal and is predominantly greenish or greenish gray above, except for its rufous cap; the throat is white and the remainder of the under parts are gray. No other bird in the United States is colored in this distinctive manner.

EASTERN TOWHEE. *Pipilo erythrophthalmus.* Pl. XXXIV; fig. 129

The Eastern or "Red-eyed" Towhee is certainly one of the more attractive members of our avifauna. The names "towhee," "joree," or "chewink" are all allusions to some of its calls; the name "ground robin" is in reference to its remote resemblance to the American Robin and the fact that the bird spends a considerable part of its time on the ground. In spring, however, the male will be seen to mount to the top of a tall tree where it sings loudly. The phrase *drink-your-teeeeeeeee*, the latter part wavering and drawn out, is an excellent phonetic representation of the song.

The male Eastern Towhee is largely black, for its entire head, back, and tail are of that color. The sides and flanks are rufous, and the breast and abdomen are white. The outer secondaries are white basally, producing a largely concealed white wing patch, and the tips of the outer tail feathers are also white, showing conspicuously when the bird flies. The female is identical in pattern, but where the male is black, she is reddish brown. The eye is red in both sexes.

The Eastern Towhee is a common winter resident throughout nearly all of Louisiana. It is a common summer resident in the southeastern part of the state, west to the Tunica Hills, Baton Rouge, and Napoleonville. Aside from a few breeding pairs in the vicinity of Oak Grove, in West Carroll Parish, in extreme northeastern Louisiana, the species is apparently entirely absent in summer from the northern half of the state. It would seem that the towhee has occupied the southeastern corner of the state as a breeding bird quite recently, at least in the last one hundred years, for John James Audubon failed to find it nesting in the vicinity of either St. Francisville or New Orleans—places where he spent a great deal of time and where the towhee is now one of our commonest summer birds.

The nest of the Eastern Towhee, which is usually placed in a low bush, is made of dead leaves and is lined with fine grasses. The four or five white eggs are evenly speckled with rufous, sometimes blotched on the larger end.

SPOTTED TOWHEE. *Pipilo maculatus.* Fig. 129

The Spotted Towhee is the western representative of the Eastern Towhee, which it closely resembles. It was only recently detected in Louisiana for the first time, although a few probably visit the western part of the state every winter. In the phenomenal winter of 1952-53, however, Spotted Towhees seemed to be virtually everywhere in the state and were recorded at numerous places on numerous dates from October 28 to April 13.

Despite the similarity of this species to the Eastern Towhee, the two can often be distinguished in the field. The Spotted Towhee is heavily marked on the back and scapulars with white streaks, which the Eastern Towhee lacks almost completely. The female Spotted Towhee is a dark chocolate-brown and, for this reason, she shows much less color contrast with the male than does the female of the Eastern Towhee with her mate. The eye color is orange in the western species, and the call note is a distinct, twangy *zreee*, a sound seldom made by our native towhees. Northern populations of the Eastern Towhee, which visit Louisiana in numbers in winter, have a few white or buffy emarginations to the inner secondaries and hence might suggest a Spotted Towhee to one not familiar with the conspicuous white streaking on the wings and back of the latter. Therefore, the beginner should exercise caution in recording this species unless the bird in question is seen under favorable circumstances.

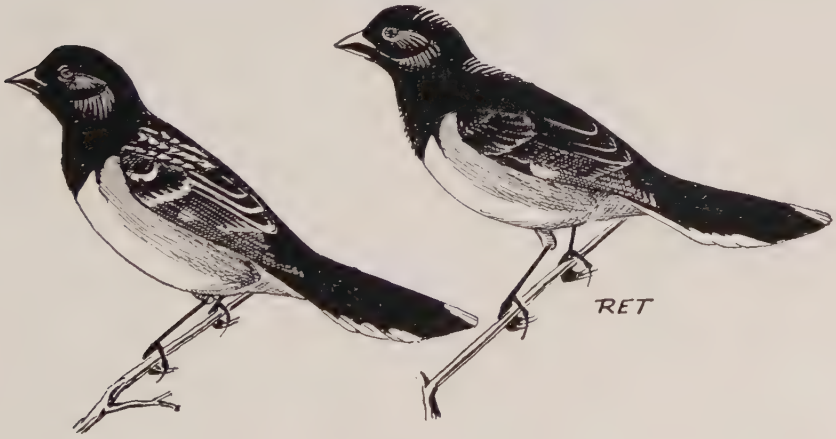

Fig. 129. Male Spotted Towhee (left) and male Eastern Towhee (right).

LARK BUNTING. *Calamospiza melanocorys.* Fig. 130

The Lark Bunting has been recorded only once in Louisiana. A specimen was collected along the highway through the marsh, a few miles from Grand Isle, on September 4, 1952. The species breeds in the Great Plains region of the western United States and normally winters from southern Texas and Arizona southward over most of the Mexican plateau. It is slightly longer and a good deal chunkier than the House Sparrow. In spring and summer the male is all black except for the large patch of white in the wings and the white inner margins to the tail feathers. The females, immatures, and winter males are grayish, heavily streaked with dusky, and possess white or buffy wing patches. This drab, streaked plumage is the one most likely to be worn by birds occurring in Louisiana, and indeed the Grand Isle specimen mentioned above was so attired. The profuse streaking and the conspicuous patches of white in the wings should serve always to distinguish the Lark Bunting from all other ground-dwelling finches.

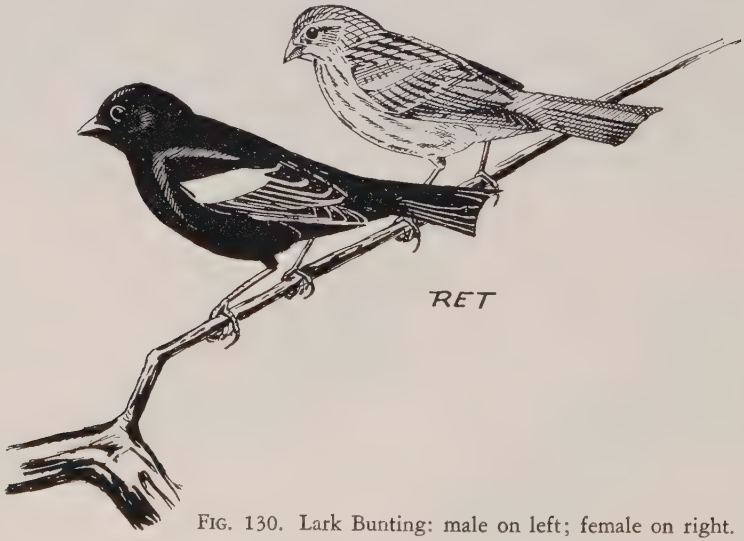

Fig. 130. Lark Bunting: male on left; female on right.

SAVANNAH SPARROW. *Passerculus sandwichensis.* Pl. XXXVI; fig. 131

This is unquestionably the commonest sparrow of fields and open situations in Louisiana in the winter months. It arrives in numbers in the last week of September and sometimes stays until mid-May or even into June. It is

a rather small, streaked sparrow that is white below, marked on the throat and breast with fine streaks, which sometimes tend to be concentrated in the center, forming a large spot. In the latter respect it resembles a Song Sparrow, but, unlike this bird, the Savannah Sparrow has a pale streak down the center of the crown, a touch of yellow on the bend of the wing, and usually a yellow spot in front of the eye. This is one of the first winter sparrows that the beginning student of ornithology encounters in the field. It should be learned at once so that it is not confused with other similar-appearing species, such as the Song Sparrow.

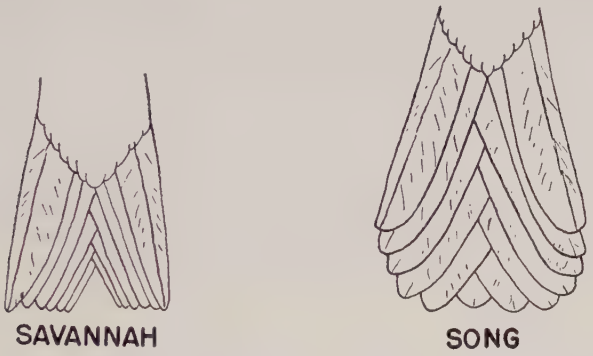

FIG. 131. Tails of two similar sparrows. That of the Savannah Sparrow is short, square-cornered, and slightly notched in the middle. In the Song Sparrow the tail is longer and wider and prominently rounded.

GRASSHOPPER SPARROW. Pl. XXXVI; fig. 132

AMMODRAMUS SAVANNARUM.

The Grasshopper Sparrow is a rather uncommon or at least a seldom-observed winter resident in Louisiana, present from the first week of October until early May. A few pairs that were presumably nesting have been found in the state in summer, but no nest has actually been located. The bird is a small, short-tailed sparrow with a dark, striped back and a buffy, unmarked breast. It also has a buffy line over the eye and a median stripe of pale buff down the center of the crown. It is the only one of the "grass sparrows" (that is, sparrows that are habitual denizens of dense stands of grass) with a plain breast. Other distinctive features are its flat-headedness, its pale face, and its squarish tail. Its favorite haunts are broom sedge fields in which there are a few small trees or brush piles. It is, however, the easiest of the grass

sparrows to chase to a perch in a hedgerow or a thicket on a woods border. The few birds that have been seen in summer were in fields of alfalfa or vetch.

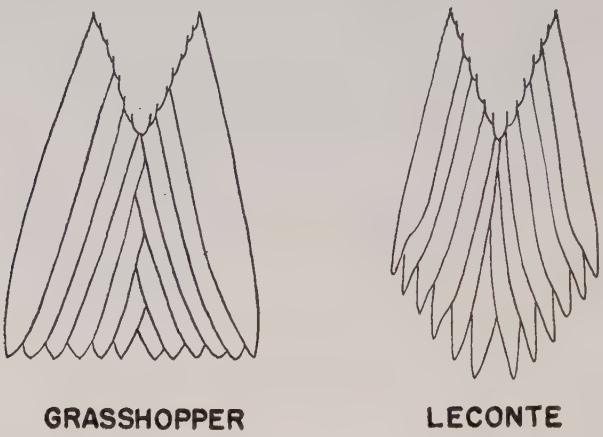

FIG. 132. Tails of two similar, grass-inhabiting sparrows. Note the narrowness and the distinct attenuation of the feathers in the tail of the Leconte Sparrow.

LECONTE SPARROW. *PASSERHERBULUS CAUDACUTUS*. Pl. XXXVI; fig. 132

Leconte and Henslow Sparrows are both commonly called "stink birds" by quail hunters because sometimes even well-trained bird dogs point them or are distracted by them. Both species occur mainly in broom sedge (*Andropogon*) fields where, even though they are often common, they are seldom seen except for the few moments when a bird jumps out of the grass at one's feet, flies twenty yards or so, and then pitches back into the grass.

The Leconte and Henslow Sparrows, along with the Sharp-tailed and Seaside Sparrows, are distinguished from other sparrows by their narrow, sharp-pointed tail feathers, which are so steeply graduated that the whole tail has a pointed effect (fig. 132). Adults of all four possess some streaking on the breast and sides; either a broad buff, yellow, or gray line over the eye; and a median stripe on the crown. In the field the Leconte Sparrow appears to be the palest of the four and has a somewhat purplish or rufous-brown nape. As a rule its habitat in Louisiana in winter is somewhat drier than that of the Henslow Sparrow, and it is nowhere more numerous than in slightly rolling terrain where there is a dense stand of broom sedge. On the coast of southwestern Louisiana, however, it is also plentiful in the short grass prairies

paralleling the Gulf beach, as, for example, along the highway between Cameron and Johnson Bayou.

The Leconte Sparrow arrives in Louisiana in the latter part of October and remains sometimes until after the first of April. The bird is decidedly more numerous in southern Louisiana in midwinter than it is in northern Louisiana.

HENSLOW SPARROW. *PASSERHERBULUS HENSLOWII.* Pl. XXXVI; p. 448

This "sharp-tailed" sparrow is often found in the same broom sedge situations as the preceding species, but it appears to be less numerous there. It is most common in the grass of "pine flats," particularly in the Florida Parishes. It is the darker of the two upland "sharp-tails" (the Sharp-tailed and Seaside Sparrows are found only in the coastal marshes), its nape is olive-green (rufous-brown in the Leconte Sparrow), and the wings are quite reddish.

The Henslow Sparrow has the same characteristic as the Leconte Sparrow of seldom being seen except when suddenly flushed at one's feet. When it flies away it zigzags slightly just over the top of the grass. After traveling twenty yards or so, it abruptly pitches into the grass and disappears. A good technique that often yields a perched view of both this species and the preceding one is to run as rapidly as possible to the spot where the bird disappeared, flush it again, and repeat this process over and over. Sooner or later the little bird apparently becomes curious as to the identity of its pursuer and alights briefly in a bush or on a tall weed stalk. If the field glasses are immediately brought to play, you get a good look at the bird.

Henslow Sparrows arrive in Louisiana in late October. They are usually gone by the end of March.

SHARP-TAILED SPARROW. *AMMOSPIZA CAUDACUTA.* Pl. XXXVI

Although the Sharp-tailed Sparrow breeds across the better part of southern Canada and in the northern part of the United States and is quite common in the marshes of southern Louisiana in winter, it has not been recorded in the uplands of the state, even though it must surely migrate over this section. Inland lakes with cattails and other aquatic plants around their peripheries should be watched for individuals of this species in migration.

Sharp-tailed Sparrows arrive in the coastal marshes in late October and have been known to stay as late as June 7, although generally most of them are gone by the first of May. They are the most buffy of the "sharp-tailed"

sparrows. The cheeks, the line over the eye, and often the chest are rich ochraceous-buff, and the ear patch and median stripe in the crown are gray. Immatures, before the postjuvenal molt, are faintly streaked on the upper breast and are generally darker and duller.

SEASIDE SPARROW. *Ammospiza maritima.* Pl. XXXVI

No species of bird is more appropriately named than the Seaside Sparrow. Except where our coastal marshes are very broad and deeply indented with wide salt-water bays, around which these little birds occur, the Seaside Sparrow is synonymous with the pounding of the surf. It occurs as an abundant permanent resident mainly in densely matted and usually sharp-pointed grass and sedges that line our shores in places where the ground just back of the beach is flooded at high tide. Here they run about on the ground, or on masses of debris washed up by the waves, and would escape detection if we did not know that by making a squeaking noise we can cause them to mount the taller stalks of grass and even fly toward us from every direction. It is then that we see the Seaside Sparrow and are able to note its sober gray and dark olivaceous coloration, its massive bill, and, possibly, the yellow spot in front of its eye and the yellow on the bend of the wing. Young birds in juvenal plumage are dark brown above and dingy buff below, with numerous fine streaks of dusky on the breast. Individuals that have passed through the postjuvenal molt resemble full adults but have a stronger wash of buff on the breast and about the face.

In spring the weak, buzzing song of the Seaside Sparrow pours forth from all quarters of the marsh, and occasionally the observer will see one of them jump into the air a few feet above the top of the grass to sing in mid-air. The notes have been perfectly described by Peterson as *cutcut, zhe'-eeeeeeee.* The nest is made of coarse grasses, lined with fine material, and is placed close to the ground, often a foot or so high in a mangrove bush. The three or four whitish eggs are spotted finely with brown.

Explanation of *Plate XXXVI*

Six Sparrows, All Adults

1. Savannah Sparrow (p. 484). **2.** Sharp-tailed Sparrow (p. 487). **3.** Henslow Sparrow (p. 487). **4.** Leconte Sparrow (p. 486). **5.** Grasshopper Sparrow (p. 485). **6.** Seaside Sparrow (p. 488).

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VESPER SPARROW. *Pooecetes gramineus.* Pl. XXXVII

When one is driving along a rural road or walking across an open field, a rather pale, streaked sparrow will sometimes take flight from the ground ahead of the observer. If the bird has conspicuous white outer tail feathers, it may or may not be a Vesper Sparrow, since quite a few sparrows and sparrowlike birds have the outer tail feathers white. If the bird in question, however, is also seen to have a narrow white eye ring, indistinctly streaked buffy under parts, and rufous wing coverts, it is certainly this species. The Vesper Sparrow is a fairly common to common winter resident in Louisiana from the middle of October until late in April. In addition to open pastures and roadsides, favorite haunts are burnt ground and old cornfields.

LARK SPARROW. *Chondestes grammacus.* Pl. XXXVII

This species inhabits approximately the same situations as does the Vesper Sparrow but at somewhat different seasons. The Lark Sparrow is a common summer resident in north central Louisiana where it arrives in early April and is seen in numbers until mid-September. Only very rarely does it ever occur anywhere in the state in winter, apparently moving into southern Texas and Mexico during the cold months. At Baton Rouge, and at other localities in the southern part of the state, it is only a transient, rare in April and fairly common in late summer. Southward migration into southern Louisiana is extremely early; individuals appear in August and September and only rarely as late as the middle of October.

The Lark Sparrow is a highly attractive bird, especially for a sparrow. The head is prominently marked with a patch of chestnut below and behind the eye and with a stripe of chestnut along the side of the crown; a line down the center of the crown and over the eye is whitish. There is a black streak on each side of the chin and throat; the upper parts are brownish and the under parts white, except for a small black spot in the center of the breast. The slightly graduated tail is blackish, and the outer tail feathers are tipped with white. The head pattern, the black spot on the otherwise immaculate breast, and the white-tipped outer tail feathers are diagnostic.

Like many of its close relatives, this sparrow nests in hedgerows, old grown-up pastures, and in the vicinity of small clearings in woods of oak and pine. The nest is made of rather coarse grasses and rootlets, lined with fine grasses, and is located either on the ground or in a low bush. The three to five

eggs are white or pinkish, scrawled and blotched with black, mainly on the larger end. The song is a difficult-to-describe series of trills and buzzing notes.

PINE-WOODS SPARROW. *Aimophila aestivalis.* Pl. XXXVII

One of the most melodious sounds to be heard anywhere is the clear, ethereal medley that resounds through our pine forests when the Pine-woods Sparrow pours forth its song. It is most frequently rendered early in the morning and late in the afternoon when the woods are quiet, save for the gentle murmur of a slight breeze through the pine boughs. One author interprets it as *che-e-e-e--de, de, de; che-e--chee-o, chee-o, chee-o.* Although doubtless recognizable as a reasonable transliteration of the bird's song by anyone already familiar with it, the words do not suffice to describe its quality to the uninitiated.

Pine-woods Sparrows are chestnut above and the under parts are chiefly pale grayish brown. There is a barely discernible grayish line over the eye and the bend of the wing is yellow. The other plain-breasted sparrows likely to be encountered in the habitat of the Pine-woods Sparrow all have either distinctive facial patterns, pink bills, white outer tail feathers, or profuse black streaks on the back. The present species has none of these markings, its sole unique feature being the extensiveness of the chestnut above that is virtually unbroken by noticeable streaks or other marks. The species is highly secretive and when approached it usually slinks away among the boughs or along the trunk of a fallen tree, where its colors are a perfect blend with its background of pine needles and grass.

Pine-woods Sparrows from the upper Mississippi Valley sometimes come southward to Louisiana in winter, but our own birds are almost certainly resident the year around. The species is not often found in this state outside of pine woods or woods of mixed scrub oak and pine. It is always seen singly or in pairs, never in flocks as are most other kinds of sparrows. The cup-shaped nest is a compact structure of grasses built on the ground in an open pine wood. The three to five eggs are pure white.

Explanation of *Plate XXXVII*

Five Sparrows and the Slate-colored Junco, All Adults

1. Vesper Sparrow (p. 489). **2.** Lark Sparrow (p. 489). **3.** Pine-woods Sparrow (p. 490). **4.** Slate-colored Junco (p. 491). **5.** Chipping Sparrow (p. 494). **6.** Field Sparrow (p. 495).

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HETHERINGTON '46

SLATE-COLORED JUNCO. *Junco hyemalis.* Pls. XXXVII, XXXVIII

In areas as far south as southern Louisiana, Slate-colored Juncos are mainly "weather migrants." That is to say, they come into the southern half of the state in their greatest numbers when severe cold and particularly snow and sleet blanket their more northern winter range, inducing them to move farther and farther southward. The little birds feed entirely on the ground and are hence greatly handicapped when the ground is covered. They are often called "snow birds" because they are most often seen in bad weather. I shall never forget the severe cold spell of January, 1940, in which the entire state was covered with snow. Countless thousands of ground-dwelling birds perished and some species were virtually wiped out over large areas of their winter range (for example, American Woodcock, Wilson Snipe, Eastern Phoebe, and House Wren). As soon as Highway 190 was opened, I was in one of the first cars to pass through en route to southwestern Louisiana, for I wanted to observe the effects of the cold on the bird life of that area. One of my more vivid recollections of what I saw was that of great numbers of Slate-colored Juncos feeding at the *edge of the surf* on the Cameron Parish beach, this being the only place where the ground was not buried under a blanket of snow.

The Slate-colored Junco is easily identified by its distinctive slaty black and white pattern (see illustrations). In flight the large amount of white at the sides of the tail is particularly conspicuous. Immatures are brownish slate on the head and back and hence do not show as much sharp contrast with the white of the breast and belly. Sometimes they show a tinge of pinkish on the sides and flanks but not as prominently as do most pink-sided Oregon Juncos.

Records of this species in Louisiana are mainly from the middle of October until late in March, extending rarely into April. It is far more plentiful in northern Louisiana than in the southern part of the state. In the latter area it is found principally in pine woods. The bird is generally clustered in small flocks, and it frequently utters a sort of twittering note and also a sharp smacking *tsip* that is highly diagnostic.

OREGON JUNCO. *Junco oreganus.* Pl. XXXVIII

This is one of the western species of juncos. So far as is known, it rarely visits Louisiana. One was seen by a group of competent ornithologists on the American Ornithologists' Union's field trip to Grand Isle on October 24,

1952, and another was noted in Cameron Parish on December 5, 1952. Single individuals, almost certainly this species, were seen at Cameron on January 1, 1949, and on January 1, 1954. An adult male was collected by Horace H. Jeter near Greenwood, in Caddo Parish, on January 30, 1955.

In the field the females and immatures of the Oregon Junco cannot always be distinguished with certainty from the females and immatures of the Slate-colored Junco, although individuals with extreme amounts of pink on the sides and flanks are recognizable. The males, however, are easily told apart, since the present species has a black head and a *brown* back, while the Slate-colored Junco is slate-black over the entire upper parts. The male Oregon Junco also has the sides and flanks distinctly washed with pinkish.

Explanation of *Plate XXXVIII*

Males of Two Similar Juncos

Oregon Junco (p. 491) on left. Slate-colored Junco (p. 491) on right.

AMERICAN TREE SPARROW. *Spizella arborea.* Fig. 133

There are only three completely satisfactory records of the occurrence of the Tree Sparrow in Louisiana. These are of individuals seen from February 11 to 16, 1904, at Mer Rouge in Morehouse Parish, where it was said to have been common on the dates cited, and a single bird observed at Shreveport, on October 31, 1954, by J. R. Stewart, Jr. and Horace H. Jeter. Also I am certain that I saw a Tree Sparrow on January 27, 1940, feeding with a horde of other sparrows on the side of the highway near Lottie during the severe cold spell of that memorable winter. After I had studied the bird for a few moments through binoculars, a large truck roared past, causing all the birds in the flock to take flight, and I was never able again to locate the individual believed to have been a Tree Sparrow.

The species breeds across northern Canada and appears to be very hardy, for its main winter range is no farther south than the central part of the United States. Hence the bird should be looked for here only in periods of severe winter weather. In the center of the gray breast there is a large black spot that is its main badge of identification. Otherwise, it resembles the Chipping Sparrow but is larger, has a gray (instead of white) line over the eye, and a rufous-brown line behind the eye, not a black line through it. The bird also has two white wing bars and the bill is dark above, light below.

Fig. 133. American Tree Sparrow.

CHIPPING SPARROW. *Spizella passerina.* Pl. XXXVII; p. 496

The diminutive Chipping Sparrow is a common permanent resident throughout the pine regions of the state, where it inhabits the edges of pastures and orchards, as well as open decidious woods and stands of pine. In winter it occurs not infrequently in pastures and open situations in the alluvial bottom lands, sometimes even on the coastal ridges. The adult has a black forehead, a rufous cap, a white line over the eye, and a black line through it. The lower back and rump are grayish and the under parts are grayish white, while the upper back is brownish streaked with black. The bill is jet-black in the breeding season. Immatures have a streaked crown with little or no rufous, and the under parts, cheeks, and line over the eye are buffy instead of white.

The song of the Chipping Sparrow is a dry, rattling trill, all on one pitch. The four or five greenish-blue eggs with brown or black markings on the larger end are laid in a nest of grasses and fine twigs, heavily lined with hairs, five to twenty feet above the ground in a bush or tree.

BREWER SPARROW. *Spizella breweri* Fig. 134

There is only one record in the state for this western species. One was seen on a ridge near the Gulf beach at Cameron on December 6, 1952, and was collected the following day to verify positively its identification. The specimen is now on display in the mounted bird collection in the Louisiana State University Museum.

The Brewer Sparrow resembles an immature Chipping Sparrow except that it is slender, is more pale grayish buff (less reddish brown) in color, and has many more tiny streaks on the crown. The color of the rump is the same as the ground color of the back, while in the immature Chipping Sparrow the rump is gray, in sharp contrast to the brownish ground color of the back.

Another species with which the Brewer Sparrow is likely to be confused is the Clay-colored Sparrow (*Spizella pallida*). The latter, although not yet entitled to a place on the state list, has twice been identified in Louisiana by John Gee—one of Louisiana's most competent field ornithologists. The first Clay-colored Sparrow seen by Mr. Gee was an adult studied at leisure four miles east of Cameron on November 28, 1953. The second individual was observed near Anchor, in Pointe Coupee Parish, on December 26, 1954. Although Mr. Gee is confident of the correctness of his two identifications, he concurs with me that his records should be held in abeyance until at least one

specimen of the species has been taken in the state.[1] So closely do some individuals of the Clay-colored Sparrow resemble some immature Chipping Sparrows that field identifications in many instances are extremely hazardous, unless one is able to study the birds minutely and to see clearly the color of the rump. In Chipping Sparrows of all ages this part is gray in contrast to the brown of the back, but in Clay-colored Sparrows, as well as in Brewer Sparrows, the rump is brown like the back. In the Clay-colored Sparrow the ocular patch is a light tan with the upper edge, which forms the postocular streak, only a dark shade of brown—not black or blackish as it is in the Chipping Sparrow. Neither immature Chipping nor any Brewer Sparrows ever have a prominent light stripe down the center of the crown, as do most Clay-colored Sparrows. The Brewer Sparrow is further distinguished by the numerous fine, black streaks on its crown and by its over-all grayer (less brownish) coloration.

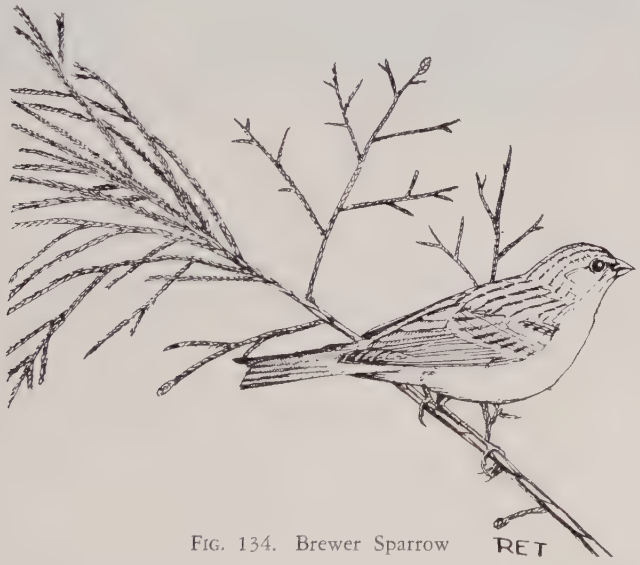

FIG. 134. Brewer Sparrow

FIELD SPARROW. *SPIZELLA PUSILLA.* Pl. XXXVII

The Field Sparrow is a moderately common to common permanent resi-

[1] The confirmation of the occurrence of the Clay-colored Sparrow in Louisiana was accomplished, I am happy to say, by Mr. Gee himself on April 16, 1955, when he collected a male of the species approximately 2.5 miles east-southeast of Cameron. The specimen is now in the LSUMZ. This record brings the number of species known to occur in the state to 378.

Chipping Sparrows—Two Looked the Wrong Way ALLAN D. CRUICKSHANK

Adult White-throated Sparrow ALLAN D. CRUICKSHANK

dent throughout nearly all of Louisiana. It inhabits, as its name indicates, fields, pastures, and other open places. It resembles the Chipping Sparrow but lacks the distinct facial marks of that species. The crown is reddish, as is also the ear patch, and, instead of a black line through the eye and a black bill, it has a rather prominent white eye ring and a pink bill. The upper parts are decidedly more reddish than those of the Chipping Sparrow.

The song of the Field Sparrow is a highly pleasing but somewhat plaintive whistle of two or three notes ending in a trill. The song of a single individual is remarkably constant, but the songs of different individuals differ noticeably from each other. A recently compiled collection of bird songs reproduced on phonograph records amply illustrates this by giving successively five slightly different songs of the Field Sparrow as rendered by five different birds. The nest and eggs of this species are very similar to those of the Chipping Sparrow.

HARRIS SPARROW. *Zonotrichia querula.* Pl. XXXIX

This large sparrow breeds in extreme northern Canada from the western shores of Hudson Bay, possibly as far west as Great Bear Lake. In fall it migrates to Kansas, Oklahoma, and Texas, and only occasionally in our latitude does it wander as far east as the lower Mississippi Valley. Aside from the Shreveport area and the general situation that prevailed in the winter of 1952-53, when the species was found in numerous places and on numerous dates, there are comparatively few records for the state (extreme dates: November 7 to March 19). In extreme northwestern Louisiana the Harris Sparrow appears to be a regular but uncommon winter visitor, occurring here and there, singly or in small flocks, and usually in the company of other winter sparrows.

The Harris Sparrow is easily recognized by its large size and by the presence in the adults of a black crown, black face, and black throat patch. Immatures have the feathers of the crown edged with brownish and those of the breast and sometimes the throat streaked or blotched with black but never a solid black mask and throat; the cheeks and flanks are washed with buffy. Its habitat is similar to that of the White-crowned and White-throated Sparrows, species with which it often associates.

WHITE-CROWNED SPARROW. *Zonotrichia leucophrys.* Pl. XXXIX

Few birds possess the debonair appearance of the adult White-crowned Sparrow. The manner in which it holds itself erect, with the feathers on the

back of its head slightly raised, gives it a peculiar distinction that is further heightened by the black-and-white stripes of its head and by its pinkish bill. Immatures have the black of the head replaced by rufous-brown and the white replaced by light buffy-brown.

The White-crowned Sparrow breeds across northern North America and at high elevation in the Rockies, and it winters in the southern United States and Mexico. Fall migrants appear in Louisiana generally in October, and a few may linger as late as May. The bird frequents hedgerows, overgrown pastures, and other similar situations where there are brush heaps, blackberry tangles, or any sort of thickets in the open. Immatures are seen much more frequently in Louisiana than are adults, at least until after the prenuptial molt is completed that puts the first-year birds into their first breeding plumage.

The White-crowned Sparrow is at no time very common in Louisiana, but sometimes a small flock will take up its winter residence in a corner of a certain pasture or along one short section of a railroad right of way. There the flock will remain until late the following spring, when evidently the entire group departs together for some distant coniferous clearing in a faraway Canadian wilderness.

GOLDEN-CROWNED SPARROW. *Zonotrichia atricapilla.* Pl. XXXIX

This species has been recorded only once in Louisiana. A specimen was taken at Grand Isle by P. A. Daigre on April 20, 1936. The Golden-crowned Sparrow breeds in Alaska and British Columbia and migrates southward in winter to Oregon, California, and Baja California. There are very few instances of its occurrence east of the Rocky Mountains, even as far as Colorado; hence its presence in Louisiana is quite anomalous. It resembles the White-crowned Sparrow, but it lacks the white line over the eye, and the center of the head, instead of being white, is golden yellow. The general color of the body is of a much darker tone, tending toward olive rather than either grayish or reddish brown.

Explanation of *Plate XXXIX*

Five Sparrows, All Adults

1. White-throated Sparrow (p. 499). **2.** White-crowned Sparrow (p. 497). **3.** Golden-crowned Sparrow (p. 498). **4.** Fox Sparrow (p. 499). **5.** male Harris Sparrow (p. 497).

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4
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RETucker
46

WHITE-THROATED SPARROW. *Zonotrichia albicollis.*

Pl. XXXIX; p. 496

White-throated Sparrows are unquestionably among the commonest winter birds in Louisiana. They occur in all places where there is shrubbery or other woody vegetation but do not like to venture far into the open. Where there is one of them, there are usually a dozen or more. The flocks arrive in late September or early October and are ubiquitous until the latter part of April when they begin to thin out, finally to disappear completely by mid-May.

The under parts of the species are grayish, which causes the white throat to stand out prominently. Adults have a broad white line over the eye, a yellow spot at the base of the bill, and a prominent buffy stripe down the center of the crown. Immatures have the head markings and throat patch more obscure, and there are a few indistinct streaks on the breast.

The most frequently heard call note is a *tseet*. Its song is often rendered even in midwinter and is one of the most pleasing sounds to be heard in our woods. It consists of five or six high-pitched, clear whistles, the first being very high, the others on a uniformly lower pitch. Then sometimes this is reversed, with the first note an octave lower than the last series. The song has been likened to the refrain, "Old Sam Peabody, Peabody, Peabody."

FOX SPARROW. *Passerella iliaca.*

Pl. XXXIX

Those finches that we call sparrows constitute a highly interesting group but not a colorful one. The Fox Sparrow, however, comes close to being an exception. Its bright rusty tail and general reddish tone throughout, which includes a heavy streaking and spotting of rufous and black on the under parts, give it an exceedingly attractive appearance and differentiate it from all its allies. Furthermore, on clear winter mornings when the rays of the sun are beginning to add warmth to the air, the Fox Sparrow often bursts forth into its full-toned medley of whistles that rise in cadence and then taper off in a series of soft utterances of the most pleasing sort.

The species is fairly numerous in winter in northern Louisiana, but it is not common in the southern part of the state. The first arrivals appear somewhat later than do most winter residents, for it is usually after the first of November before a Fox Sparrow is seen. The sojourn of these handsome birds is also briefer, for their departure is generally in March and only once has one been noted after the beginning of April.

LINCOLN SPARROW. *Melospiza lincolnii.* Pl. XL

The Lincoln Sparrow is not a common bird in Louisiana except in April when northbound migrants from south of the Gulf of Mexico sometimes accumulate on the coastal ridges along our shores. A few can be found in winter in the thickets throughout most of the state, but the bird is never so plentiful that it is recorded on every field trip or even on the majority of them.

The Lincoln Sparrow is a rather difficult bird to diagnose. It is essentially a streaked sparrow that is olive-brown and grayish above and grayish below, with a strong buffy wash on the breast. It can be confused with the immature Swamp Sparrow and with the Song Sparrow. However, its olive-brown color, finely streaked crown, indistinct eye ring, and the fact that the streaks on the breast and flanks are fine and do not form a spot in the middle of the breast, are all distinctive characteristics that eliminate in one way or another the other two species when the observer is in doubt. The combination of the olive-green color of the upper parts and the buffy breast band with its coextensive fine streakings is by itself diagnostic.

The species appears in Louisiana in late September or in early October and remains until the first part of May, rarely to the end of the month. It is most numerous in spring migration, which takes place mainly in April.

SWAMP SPARROW. *Melospiza georgiana.* Pl. XL

The Swamp Sparrow is an exceedingly common winter resident throughout most of Louisiana from the last days of September until late April, and a few remain into early May. As the name implies, its habitat preference is for swampy situations or damp fields. Adults are easily recognized by the reddish wings, the plain grayish under parts and cheeks, the rufous cap, and the heavy black streaks on the back. There is a fine dusky line from the ear through the eye to the base of the black bill. Immatures lack the rufous crown and gray cheeks, and the breast is lightly streaked instead of immaculate.

SONG SPARROW. *Melospiza melodia.* Pl. XL; fig. 131

Many migrant birds exhibit an entirely different personality in their winter haunts from that which they display in their breeding range. In the northern part of the eastern United States the Song Sparrow in summer is an abundant inhabitant of farmyards, towns, and the residential sections and suburbs of cities. A single city block may have two or three or even more breeding

pairs with their well-defined territories, each ruled over by a vociferous singing male. Hence, it is a conspicuous and familiar bird, liked by everyone who seeks its acquaintance. In the winter, though, large numbers of the birds leave their summer home to spend the cold months in the southland. In doing so they take on new attitudes and new behavior patterns. Instead of being sociable and often urban-dwelling, they become shy and rural. Sometimes their presence is detected only by the observer who is able to recognize the low, nasal *tchip* in the depth of a thicket or in a rank growth of broom sedge. A squeak will usually bring one of the little birds into view, but not for long, for it always seems reluctant to show itself and reveal its markings.

The Song Sparrow is approximately the size of a House Sparrow and is reddish brown in color, with the heavy streakings on the under parts concentrated in a prominent black spot in the center of the breast (an excellent field mark). The Savannah Sparrow also often has a spot on its streaked under parts. Ways of distinguishing the two are discussed in the account of the Savannah Sparrow. Another field mark particularly useful when the bird is flying away is the shape of the tail, which is rounded in the Song Sparrow, deeply indented in the Savannah (fig. 131).

The Song Sparrow arrives in early October and is common from then until the first part of April. An occasional individual may sometimes remain until the end of the month.

LAPLAND LONGSPUR. *CALCARIUS LAPPONICUS.* Pl. XL; fig. 135

When a bird that has not been previously recorded in the state is seen for the first time, it is usually a lone straggler that has for some reason wandered outside its normal range. Only rarely does a "first record" involve several individuals or a flock. Technically, the initial appearance of the Lapland Longspur in Louisiana was no exception, for when I first discovered it, at Monroe, on December 19, 1932, I encountered only a single bird, feeding in the short grass along the shore of a small lake. Two days later two more individuals were seen at a different place several miles away. On the next day, however, I made an extraordinary and wholly unexpected find—a flock of no less than 2,000 longspurs in an old cotton field a few miles south of Monroe. The species thus came close to being added to the state list on the basis of an unprecedented number of individuals. As far as the state as a whole is concerned, it has since proven to be an irregular winter visitor that is sometimes abundant when the state is blanketed in snow. At other times, its occurrence

is rather erratic, except possibly in the vicinity of Shreveport, where it seems to occur every year whether there is snow or not.

Finding longspurs is largely a matter of visiting exactly the right place. Airport landing fields are one of their favorite haunts, as is almost any short-grass area. Judging from my experience in 1932, I would expect old cotton fields to be likewise a good place in which to look for longspurs.

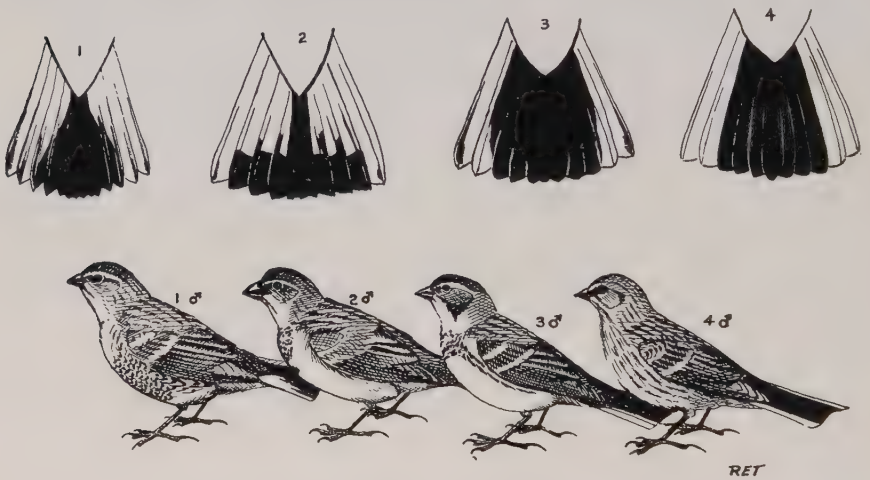

FIG. 135. Longspurs in winter plumage and their respective tail patterns: (1) Chestnut-collared Longspur; (2) McCown Longspur; (3) Lapland Longspur; (4) Smith Longspur.

Three species of longspurs have been recorded in the state—Lapland, Smith, and Chestnut-collared. A fourth species, the McCown Longspur, is almost certain eventually to be discovered here and, therefore, cognizance is given to it in the following analysis of field marks. Adults of the four species in spring plumage differ radically, but it is unlikely that we shall ever encounter one of these birds in Louisiana late enough in spring for it to have acquired its full summer dress. In winter plumage the four species are distressingly similar and can best be distinguished by the amount of white in the tail and the pattern that it forms with the black. This is shown by the accompanying diagrams (fig. 135), which should be studied carefully by the student of Louisiana birds. In addition, the following "key characters" may be of help: Lapland—black smudge on the upper breast, rusty nape, and two prominent white wing bars; McCown—rusty shoulders; Smith—buffy under parts; Chestnut-collared—no "ear patch."

Figure 117 shows the Horned Lark, Sprague Pipit, and Water Pipit, three species which occur in habitat similar to that of the longspurs and which also have white in the tail. Note in Figure 135 that among the longspurs, the Lapland has the least amount of white and that in both it and the Smith, the white is entirely lateral. In the McCown and Chestnut-collared the black forms a terminal bar, Y-like in the latter species and definitely T-shaped in the former.

The winter call notes of longspurs provide another means of field identification. The Lapland, Smith, and McCown Longspurs all have a dry, rattling note. It is so distinct and so characteristic of a longspur that I once recognized it the instant I heard it after an interim of nine years. The Lapland Longspur has a *tew* note, which is usually tacked onto the end of a rattle but is sometimes given alone, particularly on the bird's take-off from the ground. The Smith Longspur does not make the *tew* note but instead has a weak and not too often uttered *whit* (one of the calls of the Eastern Meadowlark is a similar, but a much stronger, *whit*). The Chestnut-collared Longspur does not give a rattling note, but instead has a finchlike call that is two- or four-syllabled as a rule. Horace H. Jeter, of Shreveport, informs me that the note can be expressed as *ji-jiv* or *ji-jiv, ji-jiv.*

SMITH LONGSPUR. *Calcarius pictus.* Fig. 135

This species has been recorded at only one locality in Louisiana. Horace H. Jeter, of Shreveport, found it on the Old Municipal Airport of that city on several occasions in the winter of 1952-53 and once in the winter of 1953-54. He detected a single individual on December 13, 1952, but there were no less than 35 present on the airport grounds on December 21; 45 on January 25, 1953; 33 on February 22; and 10 on March 1. In the fall of 1953 the bird returned for the second year, appearing at the airport on November 26, but shortly thereafter the field was burned over and the longspurs disappeared. The diagnostic characteristics of the species are discussed in the preceding account.

CHESTNUT-COLLARED LONGSPUR. *Calcarius ornatus.* Fig. 135

Like the Smith Longspur, this species has been recorded only in the vicinity of Shreveport, where Horace H. Jeter first discovered it on March 23, 1952, and there he has since seen it on a few occasions in subsequent winters.

Extreme dates of occurrences are October 18 and March 30. The distinctions between this species and the other longspurs of the United States are discussed in the account of the Lapland Longspur.

SNOW BUNTING. *Plectrophenax nivalis.* Pl. XL

The Snow Bunting breeds in the Arctic Zone north to within 7° of the North Pole. It winters in southern Canada and the northern part of the United States, rarely farther south. It is predominantly white in color, at least in winter, and its wings are almost entirely white. No other sparrow or sparrow-like bird possesses nearly as much white.

The sole basis for the inclusion of this species on the list of the birds of Louisiana hinges on a mounted specimen that reposed in the Louisiana State Museum in New Orleans until its recent transfer to the Louisiana State University Museum in Baton Rouge. The printed label has a penciled notation in what appears to be the handwriting of Robert Glenk, long-timed curator of the New Orleans museum. This notation states that the bird was collected by George E. Beyer at Covington. I have been advised lately, however, by H. H. Kopman, who collaborated with Beyer and Andrew Allison in writing one of the first annotated lists of the birds of the state, that Beyer informed him before his death that it was not he (Beyer) who collected the Snow Bunting, but a taxidermist by the name of Schmidt. These facts are important, for it has always seemed paradoxical that if Professor Beyer had actually collected a bird as unusual in Louisiana as the Snow Bunting, he would have placed it in the Louisiana State Museum instead of depositing it with his collection at Tulane University.

Explanation of *Plate XL*

Three Sparrows, the Lapland Longspur, and the Snow Bunting

1. Song Sparrow (p. 500). **2.** Swamp Sparrow (p. 500). **3.** Lincoln Sparrow (p. 500). **4.** Lapland Longspur (p. 501). **5.** Snow Bunting (p. 504).

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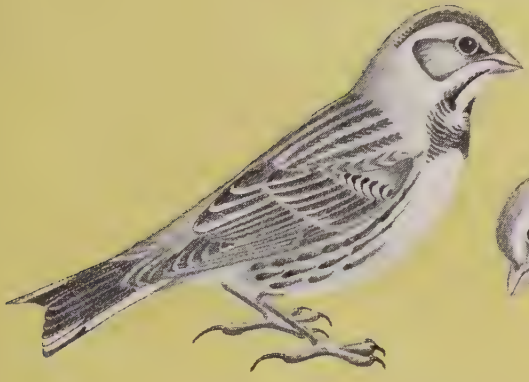

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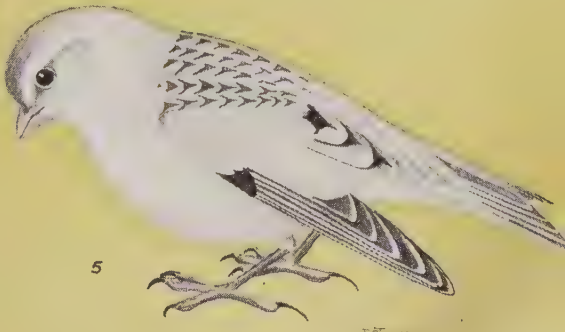

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H. E. Tucker
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Summary of Seasonal Occurrences

In preparing the following charts (Table 3), I have attempted to show in condensed form the seasons or periods of occurrence and the approximate relative abundance of 304 of the 377 species of birds that are known to have occurred in Louisiana. Although this graphic presentation provides a quick reference to much useful data, it cannot portray all the facts that may be desired. I have made no attempt to indicate the fine degrees of abundance among the various species. The top category, "common or even locally abundant," includes many shades of commonness. It includes not only the Red-winged Blackbird, which sometimes blackens the rice fields, but also the Belted Kingfisher, which is widespread and conspicuous along our bayous and streams but which is seldom seen by a single observer in numbers of more than a dozen in the course of a day. Variations in the relative abundance of a bird in its different habitats and variations in a bird's abundance in different parts of the state are often very great. Although the Seaside Sparrow, for example, is entirely absent in all the inland parishes of the state, it is abundant in its one habitat, the salt marshes of the coast. I have, therefore, designated it as "common." Neither can the charts tell much about the year-to-year fluctuations in the numbers of a given species. The Red-breasted Nuthatch inundated the state in 1940, and to a lesser extent in 1941, in numbers that would have placed it high in the top category. But, it has been virtually absent since then, and consequently I have been obliged to class it with the "very rare or irregular" species.

In a further attempt to overcome some of these difficulties, I have shown the status of each bird in the state as a whole (top line by each species), as well as its status in the Baton Rouge area (second line), which is interpreted here to include East and West Baton Rouge, East and West Feliciana, and Pointe Coupee parishes. The Baton Rouge area may not be regarded as truly indicative of the situation with respect to any inland locality, but at least it is noncoastal. Moreover, the Baton Rouge area happens to be the only area in

the interior of the state where there has been fairly complete coverage over a long number of years. An ideal arrangement, of course, would have been to have had four lines for each species: one for a strictly coastal locality, one for an area in the central-southern part of the state, one for an area in northern Louisiana, and, finally, a line summarizing the data for the state as a whole.

The numbers on the charts are the extreme dates of arrival and departure based on carefully sifted records on file in the Louisiana State University Museum of Zoology. They cover the period from the time of Audubon to October 1, 1954. Birds definitely known to breed in the state are indicated by a star after the name. Proof of breeding in the state is based on the discovery of an actual nest with eggs or with young, but the detection of juveniles barely capable of flight is also considered sufficient. In the case of several species such unimpeachable evidence of breeding in Louisiana is still lacking, although the birds in question almost surely do so. These I have indicated by a black dot after the name. But in a few instances the evidence is so equivocal I have resorted to the use of a question mark.

Observations that extend any of the migration dates or the seasons of occurrence, as well as any new information relating to the birds of Louisiana, should be transmitted along with full particulars to the Museum of Zoology in order that the new facts may be put on file for future use by anyone who is interested. This does not mean to imply that every sight record of a bird that comes into the Museum is automatically accepted and used. Sight records of of birds are particularly subject to error, even when made by the most competent ornithologist. Consequently, to be of value they should invariably be accompanied by full supporting details. Scientific data of any sort must ever be subject to the closest scrutiny and to the most rigid tests of their validity. Science is truth. When we seek the truth, we must always demand the evidence.

Table 3.

Charts Showing the Seasonal Occurrence of Louisiana Birds.

Common to abundant, at least locally.

Uncommon or only moderately common, but found regularly in small numbers.

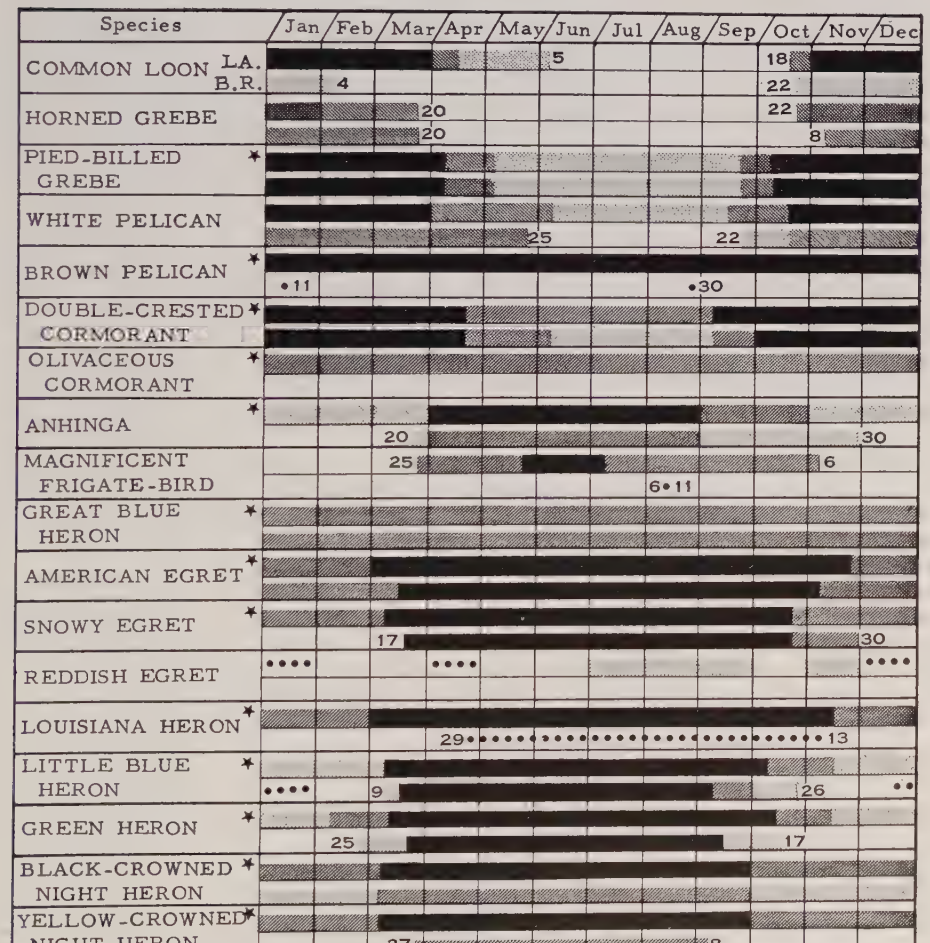
Rare; found infrequently, not every day, but to be expected, particularly at certain times of the year.

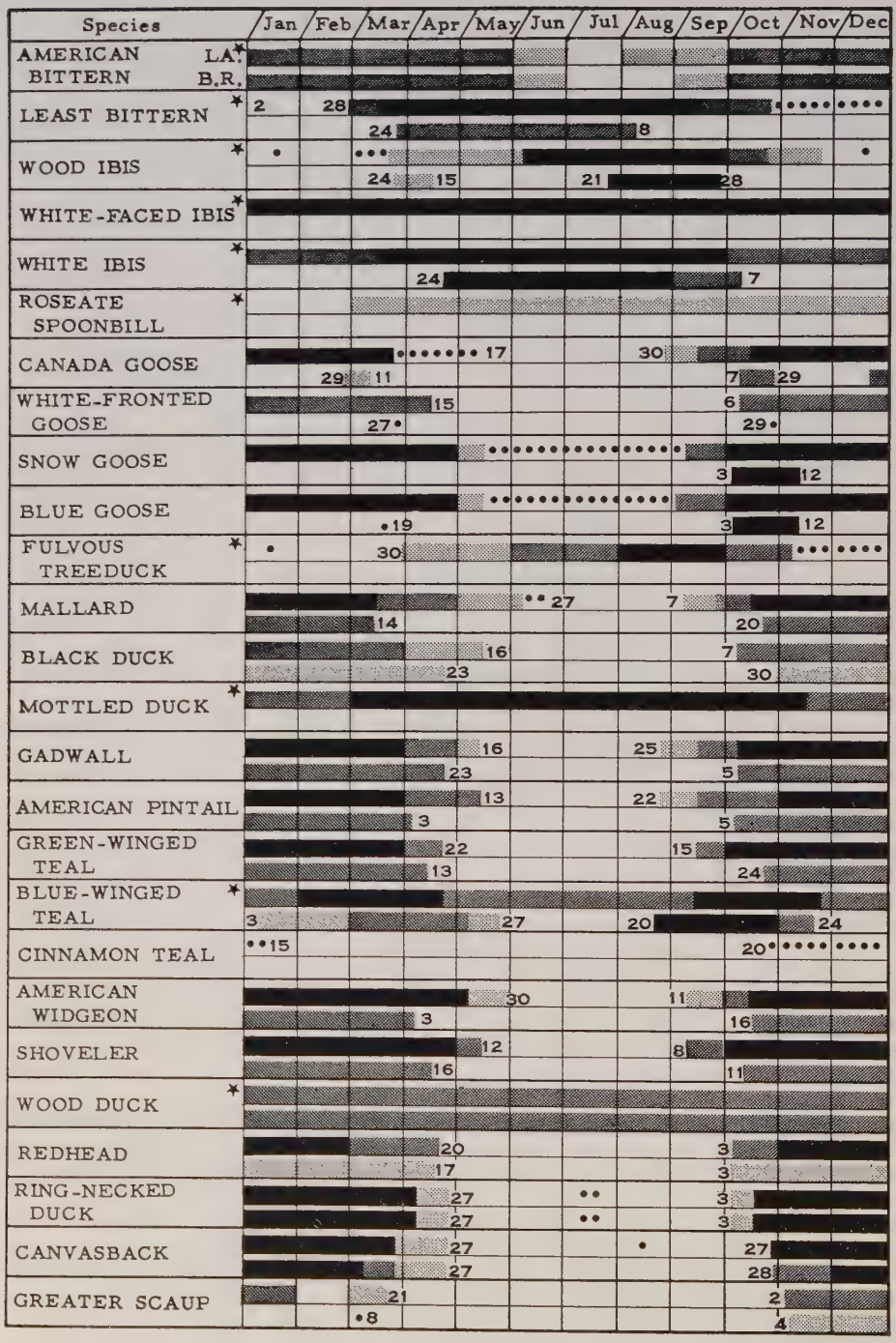
• • • Very rare or irregular; not found every week or even every month during its season, sometimes skipping a year or more, but when present possibly locally common for a short period.

★ Breeding known.

• Breeding assumed but not confirmed.

Note: The first line by each species shows the status of the bird in the state as a whole; the second line shows the status in the Baton Rouge area as geographically defined on page 505.




Species
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AMERICAN BITTERN
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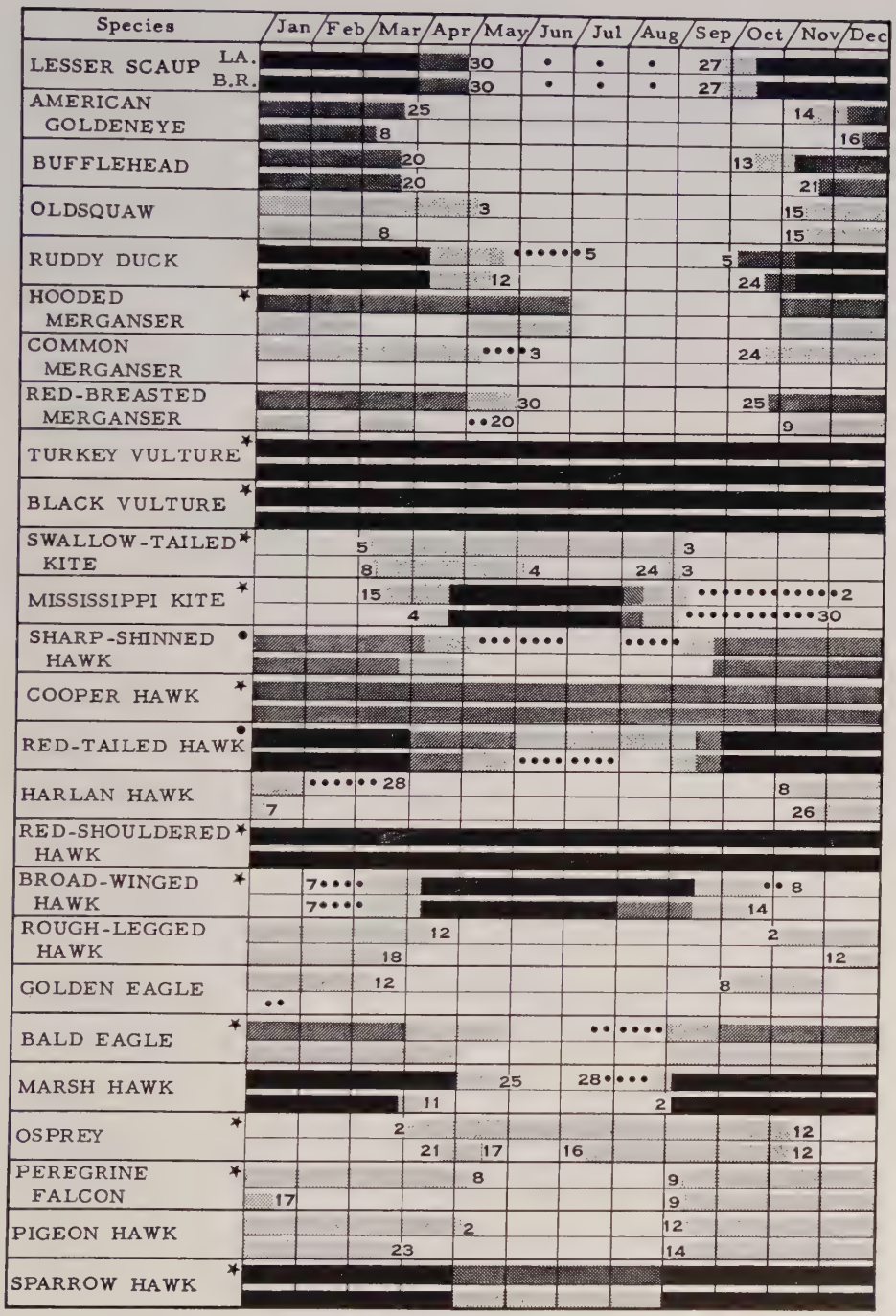
LEAST BITTERN
WOOD IBIS
WHITE-FACED IBIS
WHITE IBIS
ROSEATE SPOONBILL
CANADA GOOSE
WHITE-FRONTED GOOSE
SNOW GOOSE
BLUE GOOSE
FULVOUS TREEDUCK
MALLARD
BLACK DUCK
MOTTLED DUCK
GADWALL
AMERICAN PINTAIL
GREEN-WINGED TEAL
BLUE-WINGED TEAL
CINNAMON TEAL
AMERICAN WIDGEON
SHOVELER
WOOD DUCK
REDHEAD
RING-NECKED DUCK
CANVASBACK
GREATER SCAUP


Species
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LESSER SCAUP
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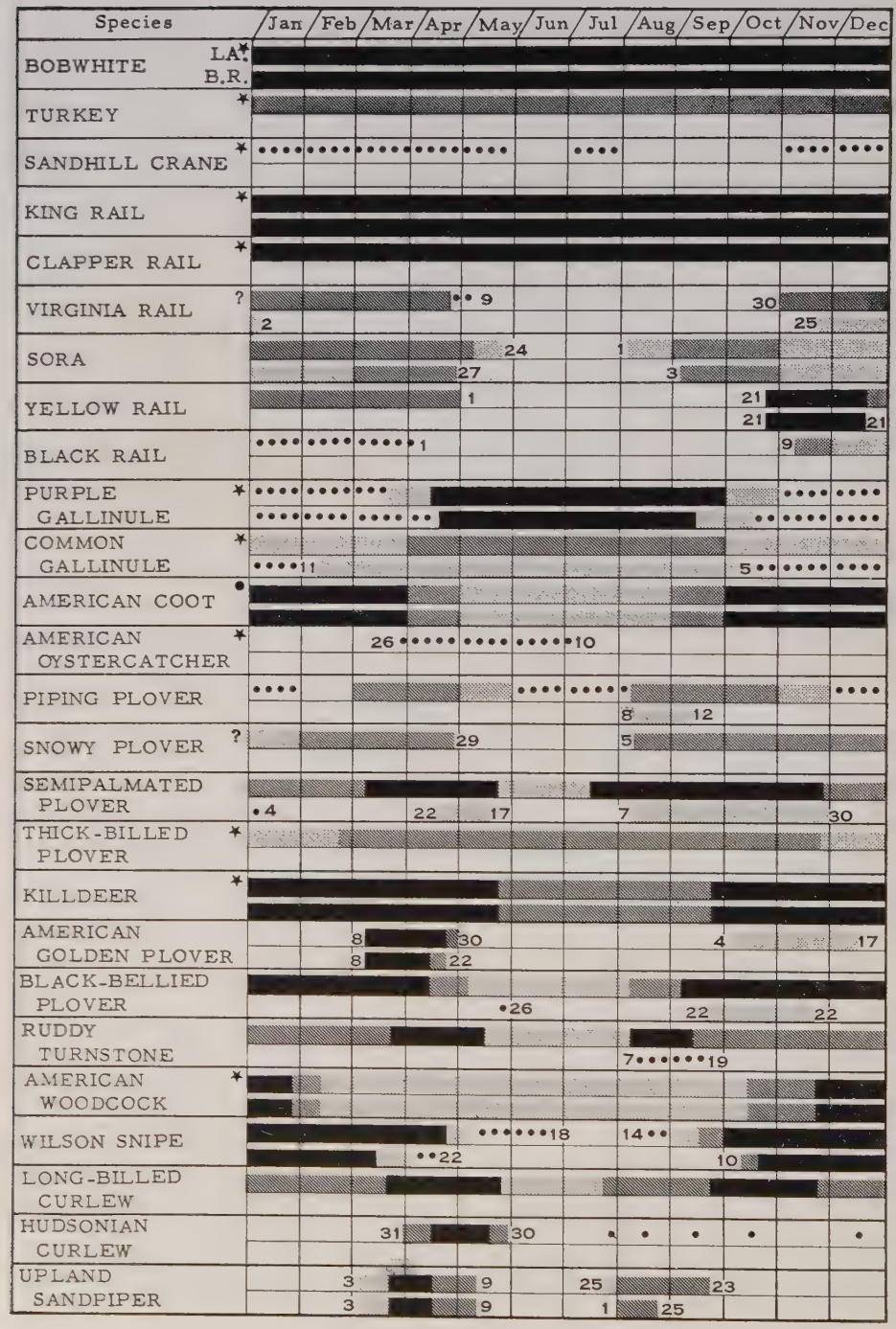
AMERICAN GOLDENEYE
BUFFLEHEAD
OLDSQUAW
RUDDY DUCK
HOODED MERGANSER
COMMON MERGANSER
RED-BREASTED MERGANSER
TURKEY VULTURE
BLACK VULTURE
SWALLOW-TAILED KITE
MISSISSIPPI KITE
SHARP-SHINNED HAWK
COOPER HAWK
RED-TAILED HAWK
HARLAN HAWK
RED-SHOULDERED HAWK
BROAD-WINGED HAWK
ROUGH-LEGGED HAWK
GOLDEN EAGLE
BALD EAGLE
MARSH HAWK
OSPREY
PEREGRINE FALCON
PIGEON HAWK
SPARROW HAWK


Species
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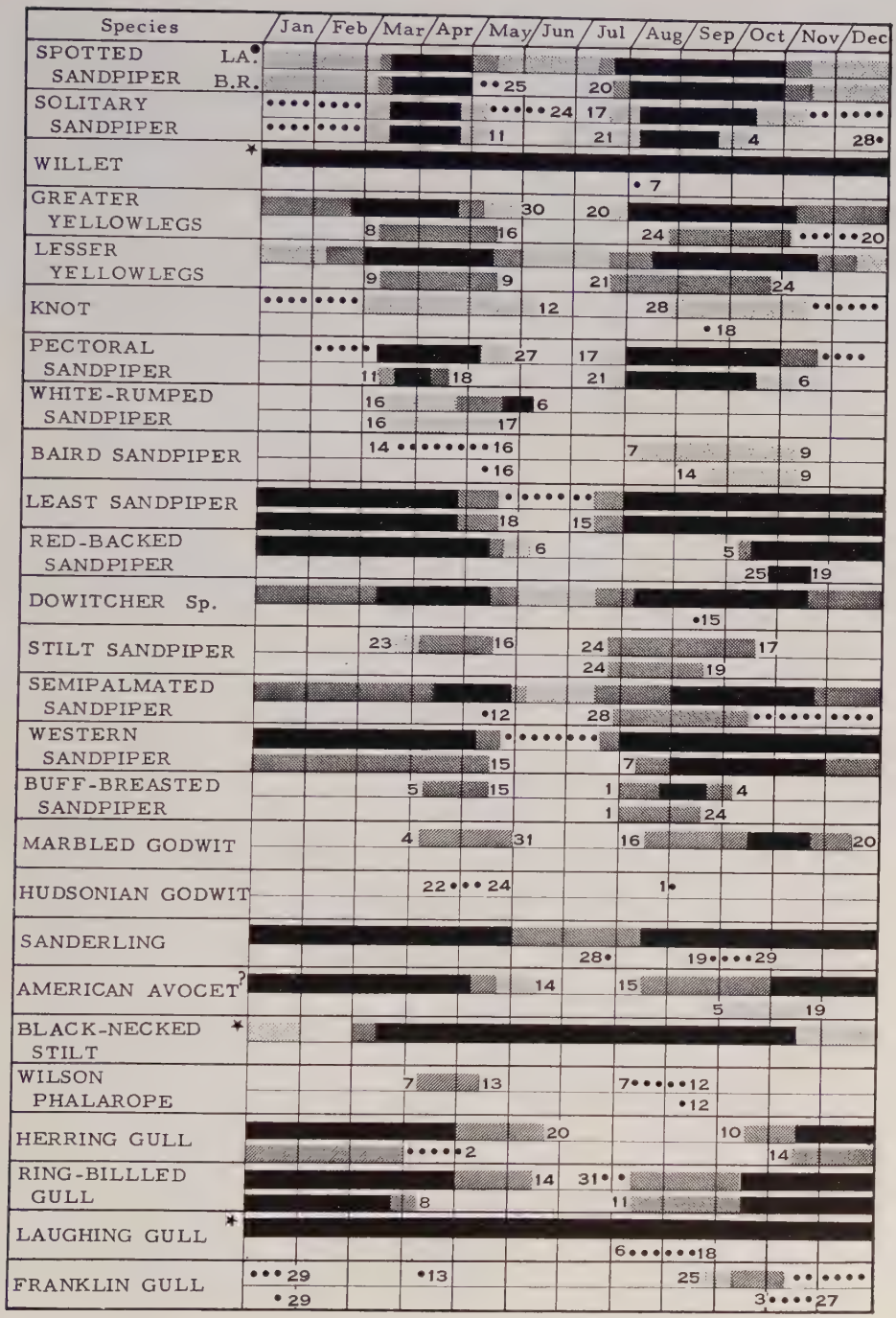
KING RAIL
CLAPPER RAIL
VIRGINIA RAIL
SORA
YELLOW RAIL
BLACK RAIL
PURPLE GALLINULE
COMMON GALLINULE
AMERICAN COOT
AMERICAN OYSTERCATCHER
PIPING PLOVER
SNOWY PLOVER
SEMIPALMATED PLOVER
THICK-BILLED PLOVER
KILLDEER
AMERICAN GOLDEN PLOVER
BLACK-BELLIED PLOVER
RUDDY TURNSTONE
AMERICAN WOODCOCK
WILSON SNIPE
LONG-BILLED CURLEW
HUDSONIAN CURLEW
UPLAND SANDPIPER


Species
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SPOTTED SANDPIPER
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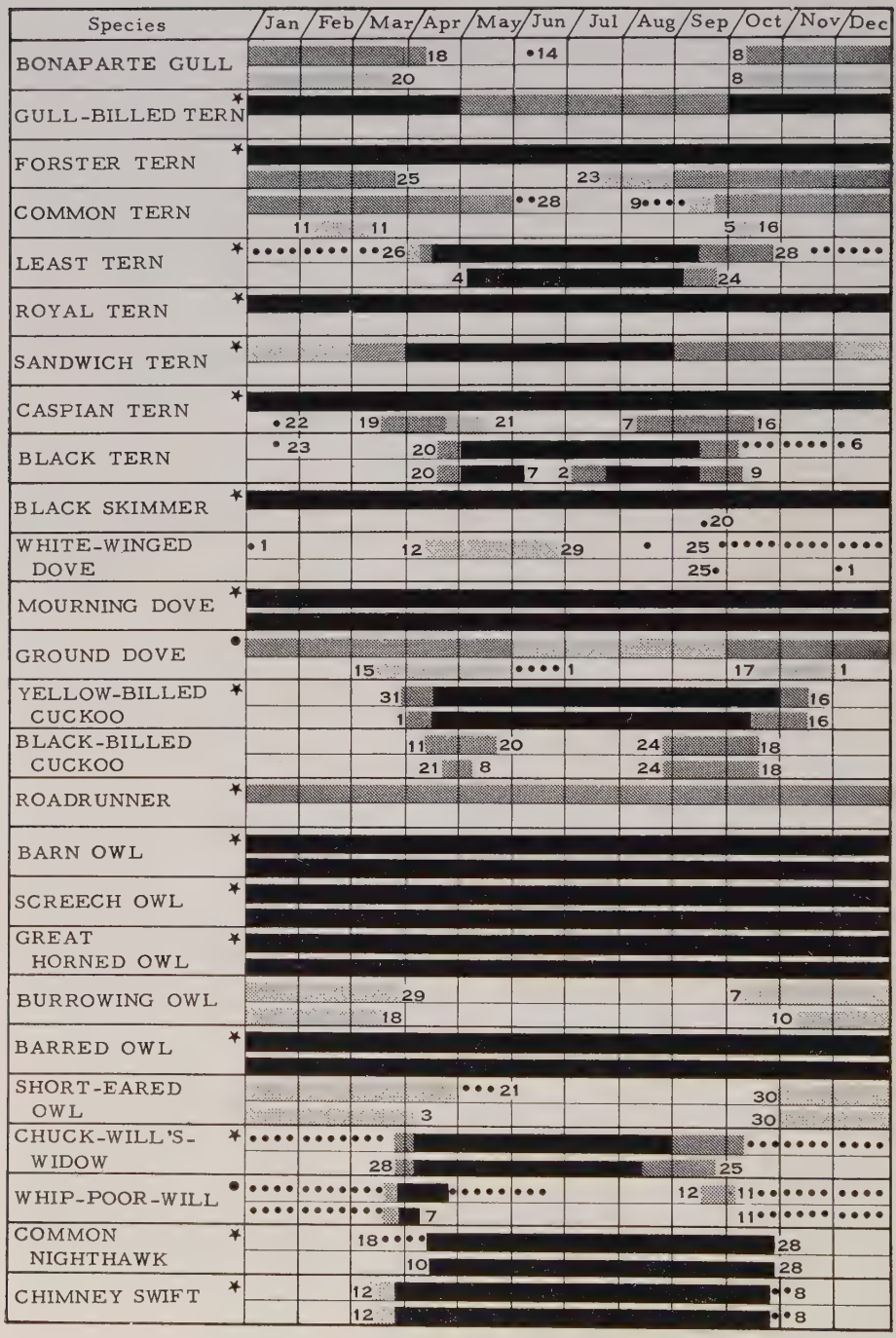
SOLITARY SANDPIPER
WILLET
GREATER YELLOWLEGS
LESSER YELLOWLEGS
KNOT
PECTORAL SANDPIPER
WHITE-RUMPED SANDPIPER
BAIRD SANDPIPER
LEAST SANDPIPER
RED-BACKED SANDPIPER
DOWITCHER Sp.
STILT SANDPIPER
SEMIPALMATED SANDPIPER
WESTERN SANDPIPER
BUFF-BREASTED SANDPIPER
MARBLED GODWIT
HUDSONIAN GODWIT
SANDERLING
AMERICAN AVOCET?
BLACK-NECKED STILT
WILSON PHALAROPE
HERRING GULL
RING-BILLLED GULL
LAUGHING GULL
FRANKLIN GULL


Species
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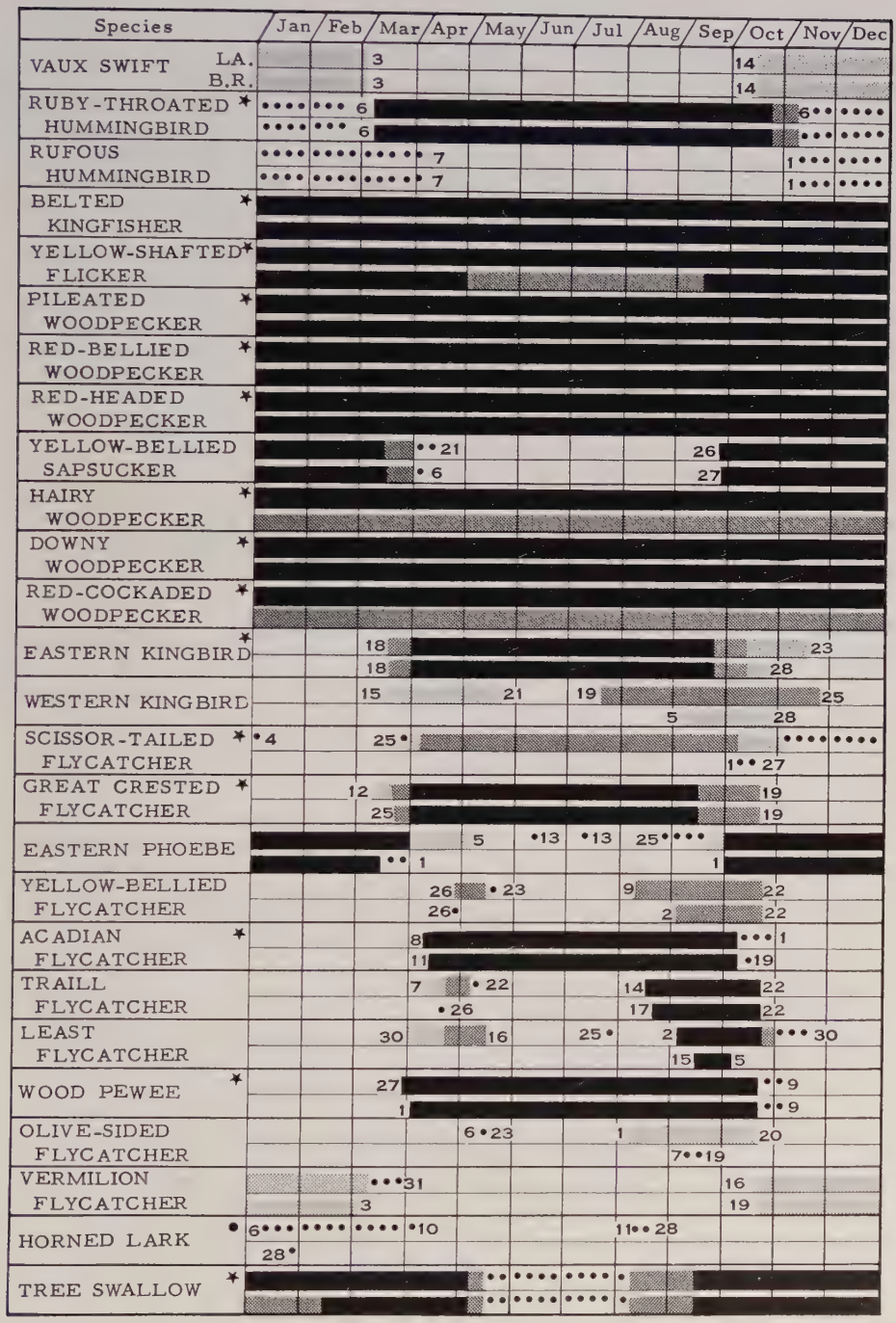
BONAPARTE GULL
GULL-BILLED TERN
FORSTER TERN
COMMON TERN
LEAST TERN
ROYAL TERN
SANDWICH TERN
CASPIAN TERN
BLACK TERN
BLACK SKIMMER
WHITE-WINGED DOVE
MOURNING DOVE
GROUND DOVE
YELLOW-BILLED CUCKOO
BLACK-BILLED CUCKOO
ROADRUNNER
BARN OWL
SCREECH OWL
GREAT HORNED OWL
BURROWING OWL
BARRED OWL
SHORT-EARED OWL
CHUCK-WILL'S-WIDOW
WHIP-POOR-WILL
COMMON NIGHTHAWK
CHIMNEY SWIFT


Species
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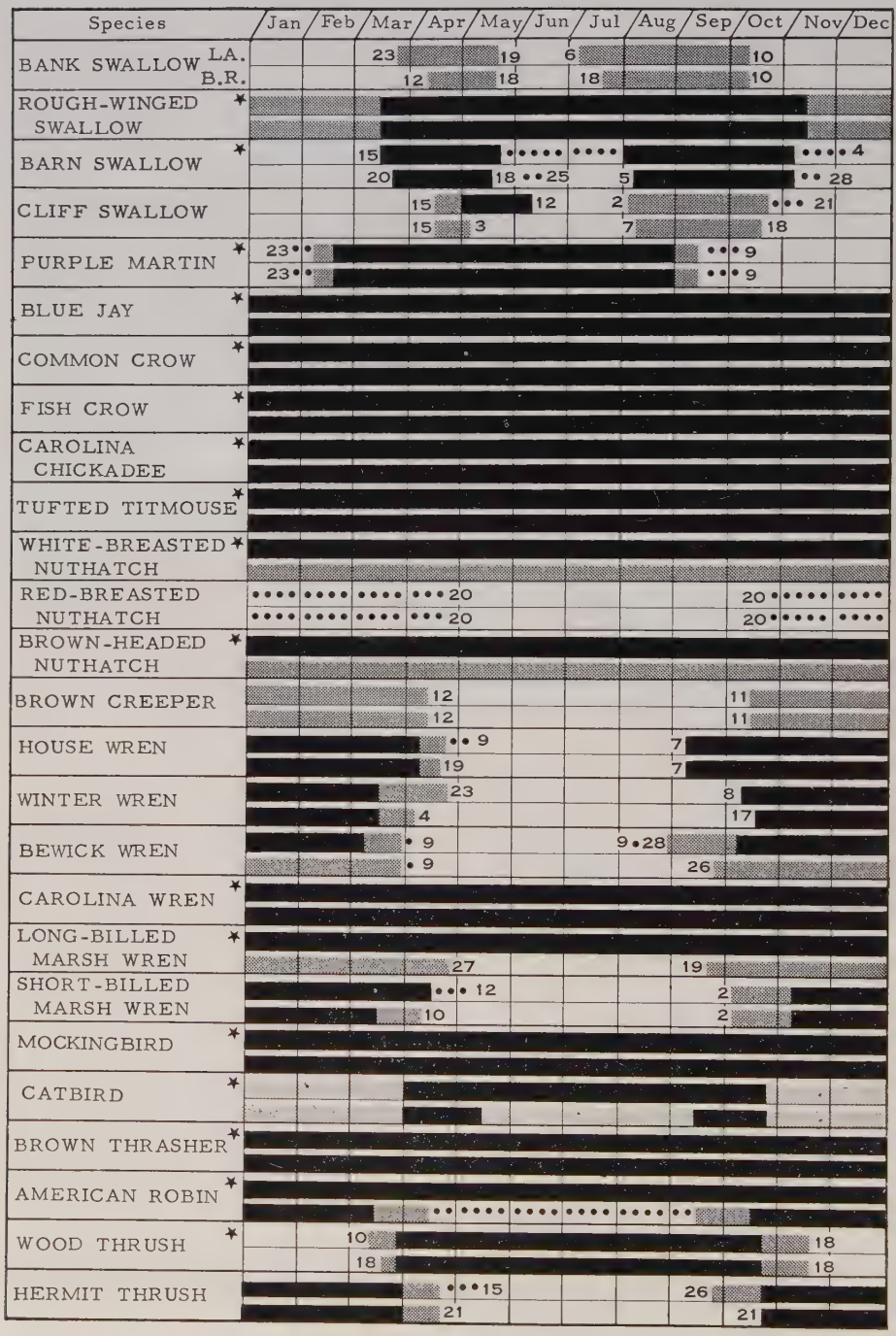
VAUX SWIFT
LA.
B.R.
RUBY-THROATED HUMMINGBIRD
RUFOUS HUMMINGBIRD
BELTED KINGFISHER
YELLOW-SHAFTED FLICKER
PILEATED WOODPECKER
RED-BELLIED WOODPECKER
RED-HEADED WOODPECKER
YELLOW-BELLIED SAPSUCKER
HAIRY WOODPECKER
DOWNY WOODPECKER
RED-COCKADED WOODPECKER
EASTERN KINGBIRD
WESTERN KINGBIRD
SCISSOR-TAILED FLYCATCHER
GREAT CRESTED FLYCATCHER
EASTERN PHOEBE
YELLOW-BELLIED FLYCATCHER
ACADIAN FLYCATCHER
TRAILL FLYCATCHER
LEAST FLYCATCHER
WOOD PEWEE
OLIVE-SIDED FLYCATCHER
VERMILION FLYCATCHER
HORNED LARK
TREE SWALLOW


Species
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BANK SWALLOW
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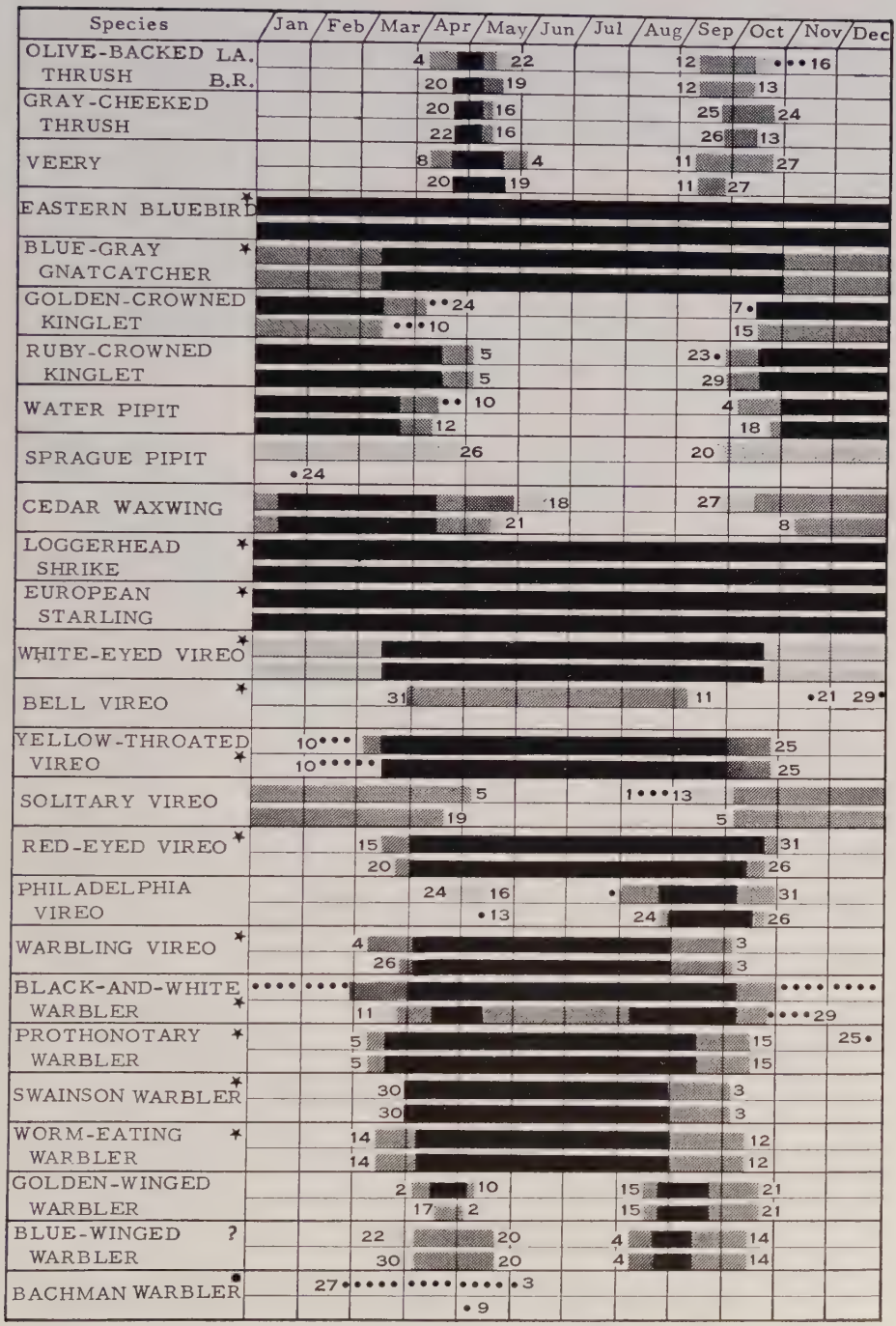
B.R.
ROUGH-WINGED SWALLOW
BARN SWALLOW
CLIFF SWALLOW
PURPLE MARTIN
BLUE JAY
COMMON CROW
FISH CROW
CAROLINA CHICKADEE
TUFTED TITMOUSE
WHITE-BREASTED NUTHATCH
RED-BREASTED NUTHATCH
BROWN-HEADED NUTHATCH
BROWN CREEPER
HOUSE WREN
WINTER WREN
BEWICK WREN
CAROLINA WREN
LONG-BILLED MARSH WREN
SHORT-BILLED MARSH WREN
MOCKINGBIRD
CATBIRD
BROWN THRASHER
AMERICAN ROBIN
WOOD THRUSH
HERMIT THRUSH


Species
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OLIVE-BACKED THRUSH
LA.
B.R.
GRAY-CHEEKED THRUSH
VEERY
EASTERN BLUEBIRD
BLUE-GRAY GNATCATCHER
GOLDEN-CROWNED KINGLET
RUBY-CROWNED KINGLET
WATER PIPIT
SPRAGUE PIPIT
CEDAR WAXWING
LOGGERHEAD SHRIKE
EUROPEAN STARLING
WHITE-EYED VIREO
BELL VIREO
YELLOW-THROATED VIREO
SOLITARY VIREO
RED-EYED VIREO
PHILADELPHIA VIREO
WARBLING VIREO
BLACK-AND-WHITE WARBLER
PROTHONOTARY WARBLER
SWAINSON WARBLER
WORM-EATING WARBLER
GOLDEN-WINGED WARBLER
BLUE-WINGED WARBLER
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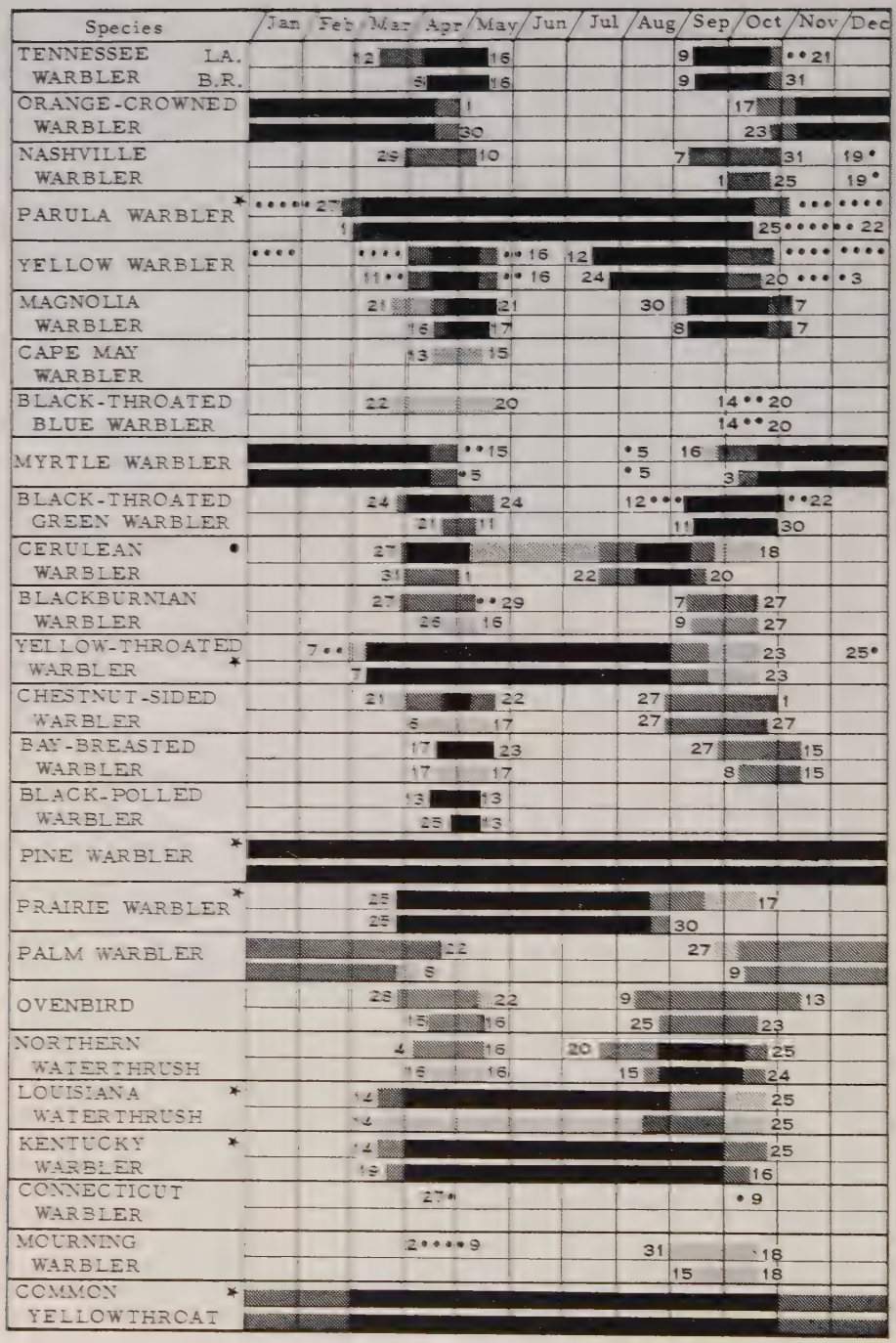
BACHMAN WARBLER


Species
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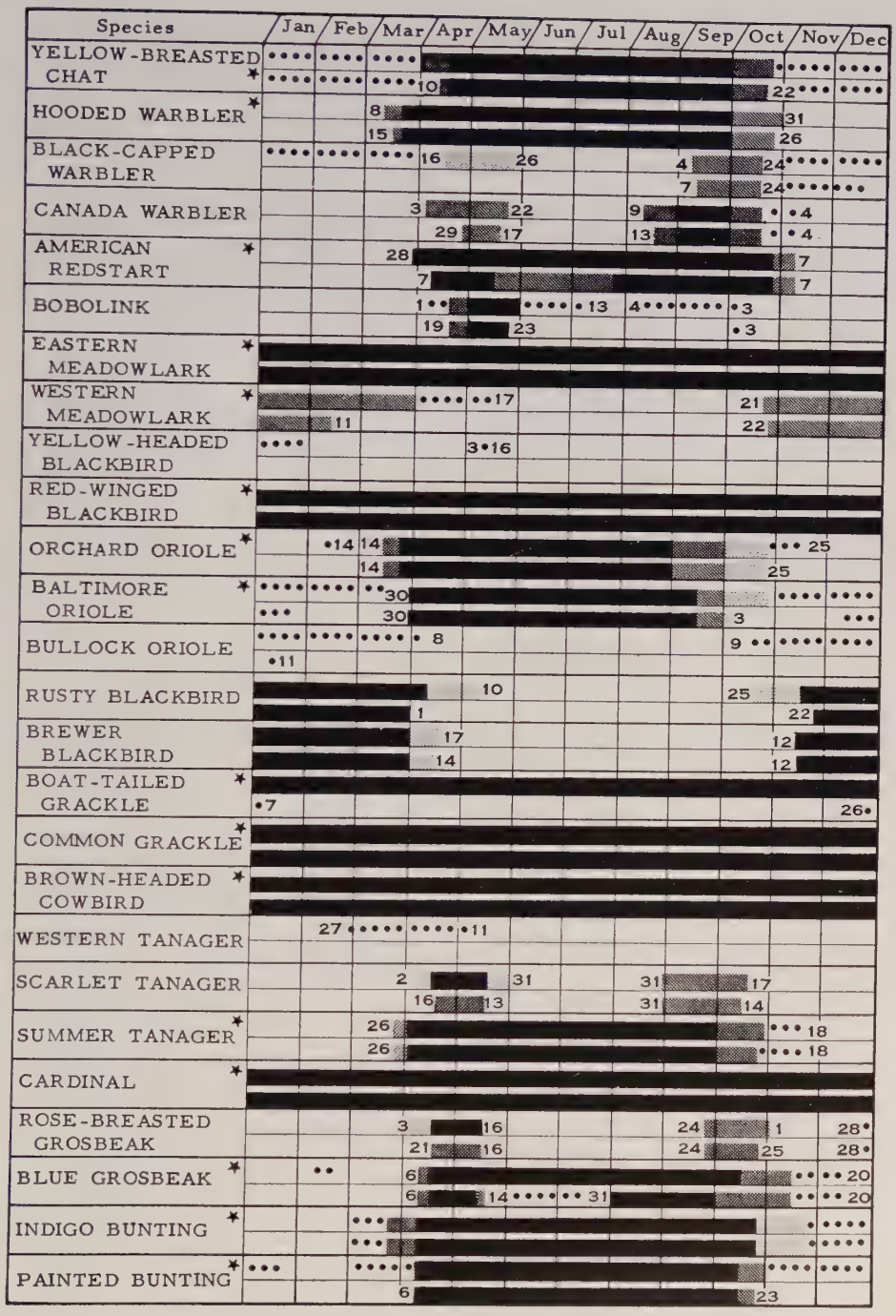
TENNESSEE WARBLER LA.
TENNESSEE WARBLER B.R.
ORANGE-CROWNED WARBLER
NASHVILLE WARBLER
PARULA WARBLER
YELLOW WARBLER
MAGNOLIA WARBLER
CAPE MAY WARBLER
BLACK-THROATED BLUE WARBLER
MYRTLE WARBLER
BLACK-THROATED GREEN WARBLER
CERULEAN WARBLER
BLACKBURNIAN WARBLER
YELLOW-THROATED WARBLER
CHESTNUT-SIDED WARBLER
BAY-BREASTED WARBLER
BLACK-POLLED WARBLER
PINE WARBLER
PRAIRIE WARBLER
PALM WARBLER
OVENBIRD
NORTHERN WATERTHRUSH
LOUISIANA WATERTHRUSH
KENTUCKY WARBLER
CONNECTICUT WARBLER
MOURNING WARBLER
COMMON YELLOWTHROAT


Species
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YELLOW-BREASTED CHAT
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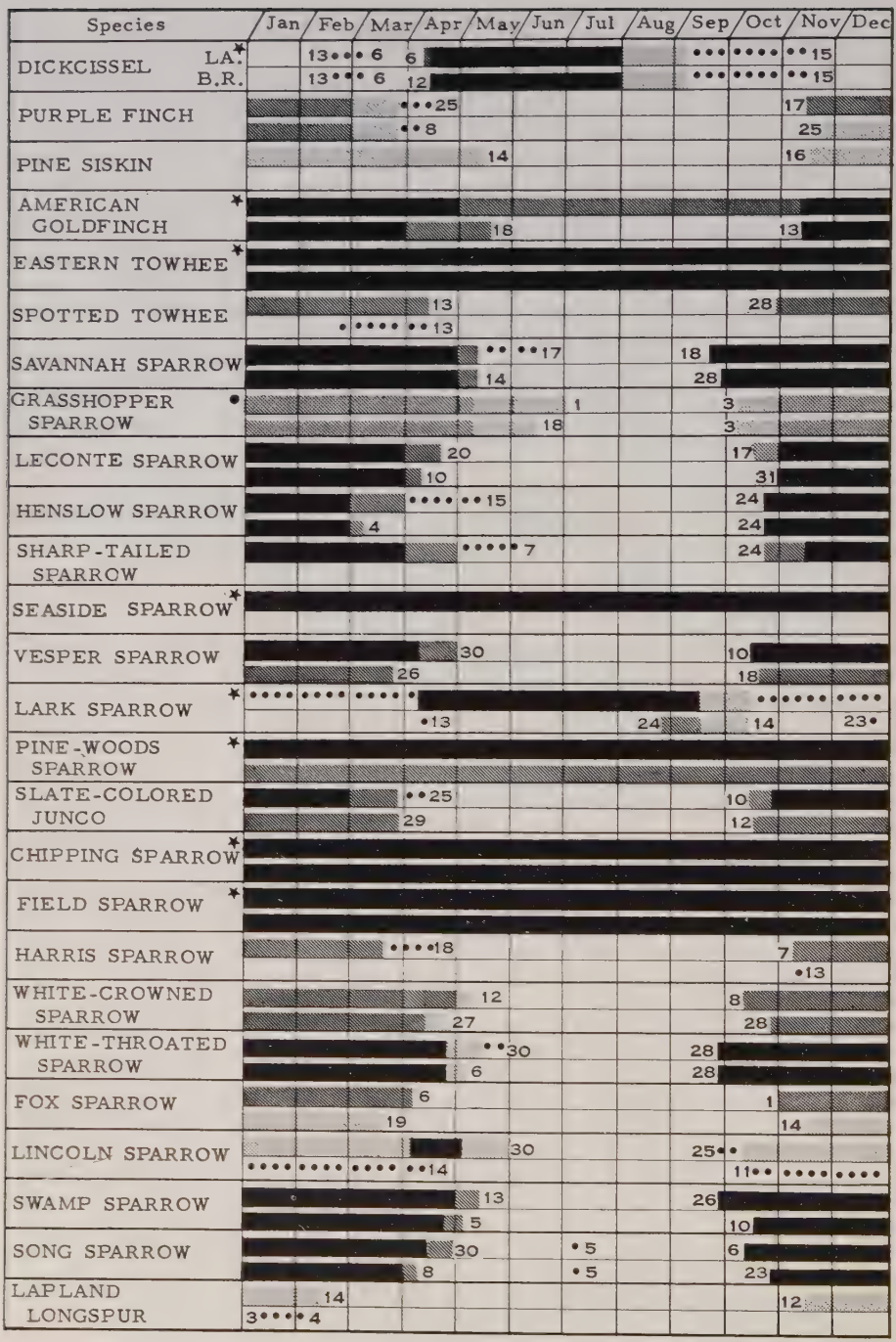
BLACK-CAPPED WARBLER
CANADA WARBLER
AMERICAN REDSTART
BOBOLINK
EASTERN MEADOWLARK
WESTERN MEADOWLARK
YELLOW-HEADED BLACKBIRD
RED-WINGED BLACKBIRD
ORCHARD ORIOLE
BALTIMORE ORIOLE
BULLOCK ORIOLE
RUSTY BLACKBIRD
BREWER BLACKBIRD
BOAT-TAILED GRACKLE
COMMON GRACKLE
BROWN-HEADED COWBIRD
WESTERN TANAGER
SCARLET TANAGER
SUMMER TANAGER
CARDINAL
ROSE-BREASTED GROSBEAK
BLUE GROSBEAK
INDIGO BUNTING
PAINTED BUNTING


Species
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DICKCISSEL
LA.
B.R.
PURPLE FINCH
PINE SISKIN
AMERICAN GOLDFINCH
EASTERN TOWHEE
SPOTTED TOWHEE
SAVANNAH SPARROW
GRASSHOPPER SPARROW
LECONTE SPARROW
HENSLOW SPARROW
SHARP-TAILED SPARROW
SEASIDE SPARROW
VESPER SPARROW
LARK SPARROW
PINE-WOODS SPARROW
SLATE-COLORED JUNCO
CHIPPING SPARROW
FIELD SPARROW
HARRIS SPARROW
WHITE-CROWNED SPARROW
WHITE-THROATED SPARROW
FOX SPARROW
LINCOLN SPARROW
SWAMP SPARROW
SONG SPARROW
LAPLAND LONGSPUR

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ONE OF THE MANY notable features of Oberholser's *Bird Life of Louisiana* is its superb bibliography. Every publication up to 1938 that contains an important reference to Louisiana birds is listed therein, beginning with Le Page Du Pratz's *Histoire de la Louisiane* that appeared in 1758. To list again all the 477 titles cited by Oberholser, even though I have consulted virtually every one of the original works at one time or another, would be superfluous. Consequently, except for a few works to which direct reference has been made in the text, I have included here only the publications incorporating significant references to the birds of the state that have appeared since the termination of Oberholser's compilation. But I have done one thing more. I have included in the present bibliography a number of general ornithological works, such as guides, manuals, and textbooks, as well as a selection of technical treatises on specialized aspects of the science. If the more serious student consults even a small assortment of this last category of listings, he cannot fail to be apprised of the great scope of the science and hence may be led from the delightful but hobbyist pathway of mere "bird listing" to the no less delightful but more fruitful pursuit of real ornithology—the scientific study of birds and avian biology.

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1947. Status of the Whooping Crane. *Wilson Bull.*, 59:127-128.

Mentions the occurrence and nesting of the Whooping Crane in the White Lake district of Vermilion Parish in 1939 and the disastrous losses to this colony that took place after the storm and floods of early August, 1940.

HAMES, FRANCES, AND EARL R. GREENE

1944. Christmas Bird Count (New Orleans, La.). *Aud. Mag.*, Section III [=II], 46:50.

Two observers together record 43 species on December 19, 1943.

HAMILTON, G. DALE [see Jeter, Horace H., Ambrose Daigre, and G. Dale Hamilton]

HAMILTON, G. DALE [see Jeter, Horace H., and G. Dale Hamilton]

HANN, HARRY W.

1953. *The Biology of Birds.* Edwards Brothers, Inc., Ann Arbor, Mich.

A good supplementary text on avian biology, especially recommended for beginners in bird study.

HASBROUCK, EDWIN M.

1944. Apparent Status of the European Widgeon in North America. *Auk*, 61:93-104.

Mentions the occurrence of the species in southwestern Louisiana in the winter of 1915.

1944. Fulvous Tree-ducks in the Louisiana Rice Fields. *Auk*, 61:305-306.

HEBERT, RICHARD, ROGER T. PETERSON, AND WALTER R. SPOFFORD

1943. Duck Hawk Eyries in Southern States. *Auk*, 60:274.

Describes the discovery of a nest in a broken-top cypress [in Madison Parish, *fide* Peterson] on May 11, 1942.

HEWES, S. ELIZABETH

1941. *Common Birds of Louisiana.* Louisiana Dept. Conserv., New Orleans.

A brief, popular account of some common Louisiana birds.

HICKEY, JOSEPH J.

1951. Mortality Records as Indices of Migration in the Mallard. *Condor*, 53:284-297.

Mentions recovery of banded birds in Louisiana.

1953. *A Guide to Bird Watching.* Garden City Books, Garden City, New York.

A "must" reading for beginners in bird study.

HOWARD, JULIAN A.

1943. Status of the White-winged Scoter in Louisiana. *Auk*, 60:453.

HOWELL, ARTHUR H.

1908. Notes on the Winter Birds of Northern Louisiana. *Proc. Biol. Soc. Washington*, 21:119-124.

A list of birds observed by Howell in the northern part of Louisiana during January and February, 1908.

HOWELL, THOMAS R.

1953. Racial and Sexual Differences in Migration in *Sphyrapicus varius*. *Auk*, 70: 118-126.

Louisiana specimens of the Yellow-bellied Sapsucker included in analysis of the sex ratios of winter populations.

JETER, HORACE H.

1952. Nesting of Bell's Vireo, *Vireo bellii*, in Louisiana. *Auk*, 69:89-90.

1953. Chestnut-collared Longspur: An Addition to the Louisiana List. *Wilson Bull.*, 65:48-49.

1953. Smith's Longspur: An Addition to the Louisiana List. *Wilson Bull.*, 65:212.

JETER, HORACE H., AMBROSE DAIGRE, AND G. DALE HAMILTON

1951. Christmas Bird Count (Shreveport, La.). *Aud. Field Notes*, 5:146.

Three observers in two parties record 82 species on December 24, 1950.

1952. Christmas Bird Count (Shreveport, La.). *Aud. Field Notes*, 6:139.

Three observers in two parties record 80 species on December 23, 1951.

JETER, HORACE H., AND G. DALE HAMILTON

1953. Christmas Bird Count (Shreveport, La.). *Aud. Field Notes*, 7:150.

Two observers in two parties record 75 species on December 21, 1952.

JETER, HORACE H., *et al.*

1954. Christmas Bird Count (Shreveport, La.). *Aud. Field Notes*, 8:176.

Five observers in two to three parties record 87 species on December 26, 1953.

JOHNSON, THEO. [see Kilby, Evelyn C., John D. Kilby, and Theo. Johnson]

KENDEIGH, S. CHARLES

1952. Parental Care and Its Evolution in Birds. *Illinois Biol. Monographs*, 22:1-356.

KESSEL, BRINA

1953. Distribution and Migration of the European Starling in North America. *Condor*, 55:49-67.

Discusses the recovery in Louisiana in winter of Starlings banded in the northern part of the United States.

KIDD, J. B. [see Newsom, J. D., J. B. Kidd, and Robert E. Murry]

KILBY, EVELYN C., JOHN D. KILBY, AND THEO. JOHNSON

1942. Christmas Bird Count (Delta Natl. Wildlife Refuge, Pilot Town, La.). *Aud. Mag. Suppl.*, 44:57.

Three observers in two parties record 41 species on December 26, 1941.

KILBY, JOHN D., AND ARVEY S. CROKER

1940. Christmas Bird Count (Delta Migratory Waterfowl Refuge, Pilot Town, La.). *Bird-Lore*, 42:117.

Observers in one party record 45 species on December 25, 1939.

KILBY, JOHN D. [see Kilby, Evelyn C., John D. Kilby, and Theo. Johnson]

KOPMAN, H. H.

1915. List of the Birds of Louisiana. Part VI. *Auk*, 32:15-29. Part. VII. *Auk*, 32:183-194.

These two papers are the continuation and completion of the list of Louisiana birds by Beyer, Allison, and Kopman started in *The Auk* in 1906.

KOPMAN, H. H. [see Beyer, George E., Andrew Allison, and H. H. Kopman]

KORTWRIGHT, FRANCIS H.

1942. *The Ducks, Geese and Swans of North America.* Amer. Wildlife Inst., Washington, D. C.

An excellent account of the birds belonging to the duck family. Especially recommended to sportsmen.

LABORATORY OF ORNITHOLOGY [Cornell University]

American Bird Songs. Comstock Publishing Co., Inc., Ithaca, New York.

Two albums of eleven records. Recordings by P. P. Kellogg and A. A. Allen.

Florida Bird Songs. Comstock Publishing Associates, Ithaca, New York.

One record with songs or calls of ten species, all but one of which occur in Louisiana; hence of interest and value to ornithologists of this state. Recordings by P. P. Kellogg and A. A. Allen.

LACK, DAVID

1946. *The Life of the Robin.* H. F. & G. Witherby, Ltd., London.

A model life history study of a single species. The "robin" referred to is, of course, the European bird (*Erithacus rubecula*), not our American Robin (*Turdus migratorius*).

LE PAGE DU PRATZ, ANTOINE SIMON

1758. *Histoire de la Louisiane.* Vols. 2 (Oiseaux). Paris.

LINCOLN, FREDERICK C.

1939. *The Migration of Birds.* Doubleday, Doran & Co., Inc., New York.

One of the best books available dealing exclusively with the subject of bird migration.

1950. Migration of Birds. *U. S. Fish and Wildlife Service Circ.* 16:1-102.

A brief but well-prepared brochure on some of the main features of bird migration.

LINCOLN, FREDERICK C. [see Bullis, Harvey R., Jr., and Frederick C. Lincoln]

LOCKWOOD, A. W., AND R. M. LOCKWOOD

1948. Christmas Bird Count (Alexandria, La.). *Aud. Field Notes,* 2:99.

Observers together record 42 species on December 20, 1947.

LOCKWOOD, R. M.

1947. Christmas Bird Count (Alexandria, La.). *Aud. Field Notes,* 1:97-98.

Records 49 species on December 28, 1946.

LOCKWOOD, R. M. [see Lockwood, A. W., and R. M. Lockwood]

LORENZ, KONRAD Z.

1935. Der Kumpan in der Umvelt des Vogels. *Jour. für Ornith.,* 83:137-213, 289-413.

A classic contribution to the literature on bird behavior and its interpretation. (For English summary, see *Auk,* 54:245-273, 1937.)

LOWERY, GEORGE H., JR.

1931. Birds of North Louisiana. *Bull. Louisiana Polytechnic Inst.,* 29:1-52.

An annotated list of 252 species of birds recorded from northern Louisiana.

1938. A New Grackle of the Cassidix mexicanus Group. *Occas. Papers Mus. Zool., Louisiana State Univ.,* 1:1-11.

Contains numerous references to Louisiana specimens of the Boat-tailed Grackle.

1938. Hummingbird in a Pigeon Hawk's Stomach. *Auk*, 55:280.

1939. Vaux Swift in Louisiana. *Wilson Bull.*, 51:199-201.

1940. Geographical Variation in the Carolina Wren. *Auk*, 57:95-104.

Contains numerous references to Louisiana specimens of the Carolina Wren.

1943. The Dispersal of 21,414 Chimney Swifts Banded at Baton Rouge, Louisiana, with Notes on Probable Migration Routes. *Proc. Louisiana Acad. Sci.*, 7:56-74.

1945. Trans-Gulf Spring Migration of Birds and the Coastal Hiatus. *Wilson Bull.*, 57:92-121.

A discussion of the visible evidences of the effects of weather on spring migration of birds on the central-northern Gulf Coast and in the lower Mississippi Valley. Contains many references to Louisiana birds and to the migration of birds in this state.

1946. Evidence of Trans-Gulf Migration. *Auk*, 63:175-211.

The retort to Williams' first paper (1945) contending that "there is no direct evidence to show that birds migrating from regions south of [the United States] in spring cross the Gulf of Mexico in any appreciable numbers. . ."

1947. Extreme Arrival and Departure Dates for Migratory Birds in the Baton Rouge Region of Louisiana. *Proc. Louisiana Acad. Sci.*, 10:42-48.

1947. Additions to the List of the Birds of Louisiana. *Univ. Kansas Publ. Mus. Nat. Hist.*, 1:177-192.

Contains records of forty-five species of birds involving six species and many subspecies not previously reported to occur in the state.

1949. Central Southern Region. *Aud. Field Notes*, vol. 3.

A seasonal summary of observations on the bird life of an area embracing Louisiana, Arkansas, Mississippi, western Tennessee, western Florida, and all of Alabama except the northeasternmost corner. The periods covered are: winter season, December 1-March 31; spring season, April 1-May 31; breeding season, June 1-August 15; fall season, August 16-November 30. Records of unusual birds, effects of weather on bird life, apparent changes in status or in relative abundance, or other seasonal information pertaining to birds in the Central Southern Region should be sent to the Louisiana State University Museum of Zoology at the end of each period.

1951. A Quantitative Study of the Nocturnal Migration of Birds. *Univ. Kansas Publ. Mus. Nat. Hist.*, 3:361-472.

A comprehensive report on the results of the 1948 nationwide cooperative study of nocturnal migration. Statistical data were obtained on the hourly and nightly variations in the volume and directional flow of migration at 30 stations by counting the birds passing before the moon as seen through small telescopes. The paper contains many references to the migration of birds in Louisiana and in the Gulf Coast area.

Lowery, George H., Jr., and Robert J. Newman

1950-54. Central Southern Region. *Aud. Field Notes*, vols. 4-7.

See annotation under Lowery, 1949.

1950. The Mexican Grebe, *Colymbus d. brachypterus*, at Baton Rouge, Louisiana. *Auk*, 67:505-506.

1954. The Birds of the Gulf of Mexico. Fishery Bull. 89, *Fishery Bull U. S. Fish and Wildlife Service*, 55:519-540.

Includes an annotated list of Louisiana's coastal and offshore birds.

Lowery, George H., Jr. [see Burleigh, Thomas D., and George H. Lowery, Jr.]

Lowery, George H., Jr. [see McAtee, W. L., Thomas D. Burleigh, George H. Lowery, Jr., and Herbert L. Stoddard]

Lowery, George H., Jr., *et al.*

1940. Christmas Bird Count (Baton Rouge, La.). *Bird-Lore*, 42:116.

Five observers in one party record 66 species on December 24, 1939.

1953. Christmas Bird Count (Sabine Natl. Wildlife Refuge, La.). *Aud. Field Notes*, 7:149-150.

Eleven observers in seven parties recorded 142 species on December 28, 1952.

1953. Christmas Bird Count (St. Francisville, La.). *Aud. Field Notes*, 7:150.

Nine observers in four parties recorded 114 species on December 20, 1952.

1954. Christmas Bird Count (Sabine Natl. Wildlife Refuge, La.). *Aud. Field Notes*, 8:174-175.

Seventeen observers in eleven parties recorded 153 species on January 2, 1954.

Ludwig, Frederick E.

1943. Ring-billed Gulls of the Great Lakes. *Wilson Bull.*, 55:234-244.

Records the recovery in Louisiana of Ring-billed Gulls banded in the Great Lakes region.

Lunk, William A.

1952. Notes on Variation in the Carolina Chickadee. *Wilson Bull.*, 64:7-21.

Contains critical comments on Louisiana populations of the Carolina Chickadee.

Lynch, John J.

1943. Fulvous Tree-duck in Louisiana. *Auk*, 60:100-102.

Describes the nesting of the species in the rice fields of southwestern Louisiana.

McAtee, W. L., Thomas D. Burleigh, George H. Lowery, Jr., and Herbert L. Stoddard

1944. Eastward Migration Through the Gulf States. *Wilson Bull.*, 56:152-160.

A geographical analysis of the frequency of occurrence of western birds in the Gulf Coast states.

McIlhenny, E. A.

1938. Whooping Crane in Louisiana. *Auk*, 55:670.

1939. An Unusual Migration of Broad-winged Hawks. *Auk*, 56:182-183.

Describes the passage of a large aggregation of Broad-winged Hawks at Avery Island on September 22, 1938. From 500 to 1,000 individuals were involved.

1939. Feeding Habits of Black Vulture. *Auk*, 56:472-474.

Describes the killing and immediate consumption by Black Vultures of skunks and opossums at Avery Island. Also records the eating by Black Vultures of fresh cattle excrement in early morning.

1940. Effect of Excessive Cold on Birds in Southern Louisiana. *Auk*, 57:408-410.

An interesting account of bird mortality during the severe cold wave that struck Louisiana in January, 1940.

1941. The Passing of the Ivory-billed Woodpecker. *Auk*, 58:582-584.

An historically important account of the author's experiences in witnessing the extirpation of the Ivory-billed Woodpecker at Avery Island.

1943. Major Changes in the Bird Life of Southern Louisiana During Sixty Years. *Auk*, 60:541-549.

The author describes the changes, as witnessed by him over a period of more than five decades, in the status of 29 species of Louisiana birds. Of particular interest are his notes on the Passenger Pigeon, Carolina Parakeet, and Ivory-billed Woodpecker. His notes on certain other species are somewhat paradoxical.

1945. An Unusual Feeding Habit of the Black Vulture. *Auk*, 62:136-137.

Describes the eating by the Black Vulture of chopped sweet potatoes intended for captive deer and nutria.

McIlhenny, E. A., and Rosemary McI. Osborn

1938. Black Vultures Following Aeroplanes. *Auk*, 55:521.

Describes two observations in the vicinity of Avery Island of Black Vultures presumably following an airplane.

Miles, Merriam L.

1943. Nevada Savannah Sparrow and Northern Pine Siskin in Louisiana and Mississippi. *Auk*, 60:606-607.

Records the taking of the first example of *Passerculus sandwichensis nevadensis* in the state and the first specimen of the Pine Siskin (*Spinus pinus pinus*) since 1879.

1950. Three Unusual Records from Louisiana and Mississippi. *Auk*, 67:247-248.

Records the taking of a Rose-breasted Grosbeak specimen in winter at Slaughter and the inland occurrence of the Boat-tailed Grackle at Anchor.

MILES, MERRIAM L. [see Burleigh, Thomas D., and Merriam L. Miles]

MOUTON, JOHNEY [see Atwood, E. L., and Johney Mouton]

MURRY, ROBERT E. [see Newsom, J. D., J. B. Kidd, and Robert E. Murry]

NEWMAN, ROBERT J.

1944. Christmas Bird Count (St. Francisville, La.). *Aud. Mag.*, Section III [=II], 46:50.

Records 65 species on December 19, 1943.

1954. Central Southern Region. *Aud. Field Notes*, vol. 8.

See annotation under Lowery, 1949.

NEWMAN, ROBERT J. [see Lowery, George H., Jr., and Robert J. Newman]

NEWMAN, ROBERT J., *et al.*

1954. Christmas Bird Count (St. Francisville, La.). *Aud. Field Notes*, 8:175-176.

Thirteen observers in six parties recorded 113 species on December 26, 1953.

NEWSOM, J. D., J. B. KIDD, AND ROBERT E. MURRY

1953. Mourning Dove Management in Louisiana. *Louisiana Conserv.*, 5(8):16-18.

An analysis of the dispersal of doves banded in Louisiana and the source of "foreign" banded birds recovered in this state. Recommendations with regard to season and bag limits are made.

NORRIS, RUSSELL T.

1942. Cooper's Hawk Takes Crippled Coot. *Wilson Bull.*, 54:250.

OBERHOLSER, HARRY C.

1938. *The Bird Life of Louisiana.* Louisiana Dept. Conserv. Bull. 28:1-834.

A comprehensive and authoritative treatment of the 348 species of birds then known to occur in Louisiana. Contains life history notes and a detailed listing of specimens and other records up to 1938.

OSBORN, ROSEMARY MCI. [see McIlhenny, E. A., and Rosemary McI. Osborn]

PAYNTER, RAYMOND A., JR.

1951. Autumnal Trans-Gulf Migrants and a New Record for the Yucatán Peninsula. *Auk*, 68:113-114.

1953. Autumnal Migrants on the Campeche Bank. *Auk*, 70:338-349.

Two important papers dealing with the subject of trans-Gulf migration.

PENN, GEORGE H., JR.

1943. Quail Investigations in Louisiana. III. A Study of the Grit Requirements of Bobwhites by Gizzard Analyses. *Proc. Louisiana Acad. Sci.*, 7:49-56.

PENN, GEORGE H., JR., AND H. EUGENE WALLACE

1943. Quail Investigations in Louisiana. II. Inventory of Bobwhite in Northern Louisiana. *Proc. Louisiana Acad. Sci.*, 7:43-48.

PENN, GEORGE H., JR. [see Campbell, John S., George H. Penn, Jr., H. Eugene Wallace, and M. George Greig, Jr.]

PETERS, JAMES LEE

1931-1951. *Check-list of Birds of the World.* Vols. 1-7. Harvard University Press, Cambridge.

A complete list, with a delineation of the ranges, of all species of recent birds in the orders and families covered in the seven volumes completed before the author's death. The remaining species are to be treated by other ornithologists in a dozen or more additional volumes still to be published.

PETERSON, ROGER T.

1941. *A Field Guide to Western Birds.* Houghton Mifflin Co., Boston.

Contains a brief description, diagnostic characteristics and field marks, statement of range, and an illustration of each species of bird in the western United States, from the Pacific through the Rockies to the western parts of the Great Plains.

1947. *A Field Guide to the Birds.* 2nd ed. Houghton Mifflin Co., Boston.

Contains a brief description, diagnostic characteristics and field marks, statement of range, one or more illustrations, etc., of each species of bird in the eastern United States.

1948. *Birds over America.* Dodd, Mead & Co., New York.

An account of some of the author's experiences in his pursuit of birds. Contains references to Louisiana birds, including mention of the tree-nesting of the Peregrine Falcon in the northeastern part of the state. Both highly entertaining and informative reading.

PETERSON, ROGER T. [see Hebert, Richard, Roger T. Peterson, and Walter R. Spofford]

PETTINGILL, OLIN SEWALL, JR.

1946. *A Laboratory and Field Manual of Ornithology.* Burgess Publ. Co., Minneapolis.

An excellent manual covering most aspects of ornithology and providing an introduction to field and laboratory techniques and procedures. Highly recommended for all beginners in the study of birds.

1951. *A Guide to Bird Finding East of the Mississippi.* Oxford Univ. Press, New York.

1953. *A Guide to Bird Finding West of the Mississippi.* Oxford Univ. Press, New York.

Two volumes that are of great value to ornithologists who contemplate traveling. Gives names and directions for reaching places where certain birds may be found, the names and addresses of local ornithologists, and much other information of great use to a bird student visiting an area for the first time.

POUGH, RICHARD H.

1944. Christmas Bird Count (Mack Bayou, Madison Parish, La.). *Aud. Mag.*, Section III [=II], 46:49.

Records 28 species on December 19, 1943.

1946. *Audubon Bird Guide: Small Land Birds.* Doubleday and Co., Inc., Garden City, New York.

1951. *Audubon Water Bird Guide.* Doubleday and Co., Inc., Garden City, New York.

Two highly useful guides that together treat all the birds of the United States; profusely illustrated in color.

REICHERT, ROBERT J., AND ELSA

1951. The Inside Story of Binoculars. *Amer. Rifleman.*

An excellent analysis of specifications desired in binoculars intended for use in bird study. Reprints are obtainable from the authors by addressing them at the Mirakel Repair Co., Mt. Vernon, New York.

ROWAN, WILLIAM

1929. Experiments in Bird Migration. *Proc. Boston Soc. Nat. Hist.*, 39:151-208.

A classic study in the physiology of bird migration.

1931. *The Riddle of Migration.* Williams & Wilkins Co., Baltimore.

Recommended reading for anyone particularly interested in the subject of bird migration.

SAUNDERS, ARETAS

1951. *A Guide to Bird Songs.* Doubleday and Co., Inc., Garden City, New York.

An unexcelled treatise by the leading authority on the subject.

SIEBENALER, J. B.

1954. Notes on Autumnal Trans-Gulf Migration of Birds. *Condor*, 56:43-48.

An important contribution to the subject of trans-Gulf migration.

SPEIRS, J. MURRAY

1953. Winter Distribution of Robins East of the Rocky Mountains. *Wilson Bull.*, 65:175-183.

Mentions the recovery in Louisiana of robins banded farther north.

SPOFFORD, WALTER R. [see Hebert, Richard, Roger T. Peterson, and Walter R. Spofford]

STANLEY, ALLAN J.

1941. Sexual Dimorphism in the Cowbird, Molothrus ater. *Wilson Bull.*, 53:33-36.

The author concludes that sexual dimorphism in the Brown-headed Cowbird is not under hormonal control but is determined genetically. The study was based on specimens taken in winter at Baton Rouge.

STEVENSON, HENRY M., JR.

1944. Southeastern Limits of the Spotted Sandpiper's Breeding Range. *Auk*, 61:247-251.

Includes reference to the alleged breeding of the Spotted Sandpiper in Louisiana.

STEVENSON, JAMES O., AND RICHARD E. GRIFFITH

1946. Winter Life of the Whooping Crane. *Condor*, 48:160-178.

An important contribution to the life history of this bird. Reference is made to the occurrence of the species in Louisiana, especially in the period between 1939 and 1944.

STEWART, PAUL A.

1952. Dispersal, Breeding Behavior, and Longevity of Banded Barn Owls in North America. *Auk*, 69:227-245.

Records the capture in Louisiana of Barn Owls banded in Ohio and Oklahoma.

STILLWELL, JERRY AND NORMA

1952-1954. *Bird Songs of Dooryard, Field and Forest.* 2 vols. (33⅓ r.p.m. records). Publ. by Ficker Recording Service, Old Greenwich, Conn.

Superb recordings of the songs and calls of many wild birds. Volume 1 includes 49 species; Volume 2, 58 species.

STODDARD, HERBERT L.

1931. *The Bobwhite Quail, Its Habits, Preservation, and Increase.* Charles Scribner's Sons, New York.

A classic among life history studies. Now out-of-print but occasionally offered by second-hand book dealers.

STODDARD, HERBERT L. [see McAtee, W. L., Thomas D. Burleigh, George H. Lowery, Jr., and Herbert L. Stoddard]

Strecker, John Kern

1928. Notes on Summer Birds of the Northwestern Parishes of Louisiana. *Contrib. Baylor Univ. Mus.*, 14:1-13.

Includes a list of 82 species of birds observed in Caddo, Bossier, and De Soto Parishes in April, August, and September, 1925; April and September, 1926; April and May, 1927; and June, 1928.

Street, Phillips B.

1948. The Edward Harris Collection of Birds. *Wilson Bull.*, 60:167-184.

Contains reference to Harris's travels in Louisiana and the birds encountered by him.

Sutton, George Miksch

1941. A New Race of *Chaetura vauxi* from Tamaulipas. *Wilson Bull.*, 53:231-233.

Mentions specimens of the Vaux Swift taken in Louisiana.

1951. A New Race of Yellow-throated Warbler from Northwestern Florida. *Auk*, 68:27-29.

Contains reference to characteristics of populations of the Yellow-throated Warbler in Louisiana.

Tabor, Ava R.

1940. Bullock's Oriole in Thibodaux, Louisiana. *Auk*, 57:257.

Tanner, James T.

1939. Observations in Madison Parish, Louisiana. *Auk*, 56:90.

Describes the observation in Madison Parish of the Swallow-tailed Kite on April 2, 1937; of the Golden Eagle from March 6-12, 1938; and of the Bachman Warbler between May 25 and June 3, 1937.

1941. Three Years with the Ivory-billed Woodpecker, America's Rarest Bird. *Aud. Mag.*, 43:5-14.

An interesting account of the author's study of the Ivory-billed Woodpecker, mainly in Madison Parish.

1942. Present Status of the Ivory-billed Woodpecker. *Wilson Bull.*, 54:57-58.

A plea is made to set aside the "Singer Tract" in Madison Parish as a sanctuary for the Ivory-billed Woodpecker. This area was noted as one of three places where the species still had a chance of survival.

1942. The Ivory-billed Woodpecker. *National Audubon Society Research Report No. 1.*

A superb life history account based in large part on the author's field studies in Louisiana.

Thomson, A. L.

1949 *Bird Migration.* H. F. & G. Witherby, Ltd., London.

A classic treatise on the subject.

THOMSON, J. A.

1923. *The Biology of Birds.* The Macmillan Co., New York.

An excellent general account of avian biology.

TINBERGEN, N.

1948. Social Releasers and the Experimental Method Required for Their Study. *Wilson Bull.*, 60:6-51.

Highly recommended reading for the student of bird behavior.

WALLACE, GEORGE J.

1955. *An Introduction to Ornithology.* The Macmillan Co., New York.

A recently published general introduction to ornithology especially designed for use as a textbook. Highly recommended for the beginning and intermediate student.

WALLACE, H. EUGENE [see Campbell, John S., George H. Penn, Jr., H. Eugene Wallace, and M. George Greig, Jr.]

WALLACE, H. EUGENE [see Penn, George H., Jr., and H. Eugene Wallace]

WETMORE, ALEXANDER

1930. *The Migration of Birds.* Harvard Univ. Press, Cambridge.

A well-written general treatise on the subject.

1951. A Revised Classification for the Birds of the World. *Smithsonian Misc. Coll.*, 117(4):1-22.

A revised classification and arrangement of the orders and families of birds. Nearly all current ornithological works adhere to this author's arrangement.

WILLIAMS, GEORGE G.

1945. Do Birds Cross the Gulf of Mexico in Spring? *Auk*, 62:98-111.

The highly controversial paper in which Williams first contended that "there is no direct evidence to show that birds migrating from regions south of us in spring actually cross the Gulf of Mexico in any appreciable numbers; but there is abundant evidence to show vast numbers of these birds, both individuals and species, take the coastwise routes *around* the eastern and western edges of the Gulf."

1947. Lowery on Trans-Gulf Migration. *Auk*, 64:217-238.

Williams' rebuttal of Lowery's 1946 paper.

1950. Weather and Spring Migration. *Auk*, 67:52-65.

An attempt on theoretical grounds to account for the appearance of migrants in abnormal, off-course areas by assuming that displacements have come about as a result of the influence of meteorological forces on migratory flights. These forces cause birds "to alter their course at some time, retreat in the face of bad weather, suffer dissemination indiscriminately over the continent, seek refuge in unfamiliar areas, and return to their regular course along abnormal routes."

1950. The Nature and Causes of the 'Coastal Hiatus'. *Wilson Bull.*, 62:175-182.

The paper in which the author contends that the so-called "coastal hiatus" appears to be no more than "a lacuna south of and between two great spring migration triangles, one extending north and northeast from southern Texas, the other extending northwest, north, and northeast from Florida."

1951. Birds Against the Moon. *Nature Notes from the Gulf States* (winter, 1951), 1:5-7, 22.

A nontechnical account of the lunar method of studying nocturnal migration but particularly important as the place where the author first clearly expounds, contrary to his earlier claims that he did not deny trans-Gulf migrations in fall, that autumnal migrations are, like those in spring, largely coastwise.

1952. Birds on the Gulf of Mexico. *Auk*, 69:428-431.

An attempt at rebuttal of the evidence of trans-Gulf migration presented by Bullis and Lincoln (1952).

WING, LEONARD

1943. Relative Distribution of Mallard and Black Duck in Winter. *Auk*, 60:438-439.

Gives the Mallard-Black Duck winter ratio of abundance (1900-1939) for the eastern half of the United States. In Louisiana the ratio is 12.22 Mallards to one Black Duck. The ratio decreases to the east of Louisiana and increases to the west.

WOLFSON, ALBERT

1942. Regulation of Spring Migration in Juncos. *Condor*, 44:237-263.

1945. The Role of the Pituitary, Fat Deposition, and Body Weight in Bird Migration. *Condor*, 47:95-127.

1952. Day Length, Migration, and Breeding Cycles in Birds. *Scient. Monthly*, 74:191-200.

Three papers of great fundamental importance in connection with the physiology of bird migration.

1953. The Seventieth Stated Meeting of the American Ornithologists' Union [at Baton Rouge, La.]. *Auk*, 70:183-195.

A résumé of the first and only American Ornithologists' Union convention to be held in Louisiana.

WRIGHT, EARL GROVER [see Bailey, Alfred M., and Earl Grover Wright]

YANCEY, RICHARD K.

1953. The Louisiana Waterfowl Kill. *Louisiana Conserv.*, 5(7):7-9.

A geographical analysis of hunter bag checks with special reference to (1) the ratio of the number of ducks killed to the number of hunters, and (2) the species composition of bags in different parts of the state. The author laments the scarcity in southern Louisiana of public shooting grounds.

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WHERE MORE THAN one reference to the official English name of a species is given, the page on which the account of the species appears is listed first. The page or pages on which a species is illustrated are shown in italics. Only the primary reference is given in the case of scientific and colloquial names.

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This book was composed in ten point Intertype Garamond, two points leaded. The display type is Caslon italic. The paper for the text is Warren's Westbrook Gloss, 70-pound basis; the paper for the four-color plates is Warren's Lustro Gloss, 100-pound basis. The engravings were made by The Respess-Grimes Engraving Company, Jacksonville, Florida. Composition and printing was done by the Franklin Press, Inc., Baton Rouge, Louisiana. Four-color plates were printed by The Record Press, Inc., St. Augustine, Florida. Endpapers were lithographed in duotone by Pike Burden, Baton Rouge, Louisiana. The book was bound by the Becktold Company St. Louis, Missouri, in Holliston Roxite Linen Finish cloth.